The Builder.

VOL. LXXX.—No. 3028 FEBRUARY 16, 1901.

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The History of the Housing Question in London.

THE approach of another election for the London County Council makes it opportune to give something in the nature of a sketch of the progress of the Housing Question in the Metropolis. Both Progressives and Conservatives, as the so-called Moderates have now called themselves, admit that the Housing Question is the most important with which they have to deal. Not a little pessimism prevails in regard to it, and we should be the last to take a sanguine view of this difficult problem, yet a review of the last half-century will show that great progress has taken place. No doubt, the subject has been growing in complexity and in difficulty, but at the same time both the Legislature and Local Authorities have taken many important steps to deal with it.

The first part of this question is concerned with the progress of legislation, and in noticing it we shall follow the useful, and, indeed, indispensable, work on the subject which has lately been issued by the County Council.* So far as the Authorities of the metropolis are concerned, it is desirable to point out that from 1855 to 1889 London was governed by the Metropolitan Board of Works, and by Vestries and District Boards. In 1889 the County Council came into existence under the provisions of the Local Government Act, 1888, and in 1900 the new Municipalities, of which we have heard recently so much, superseded the Vestries and District Boards. But we have to go back to the year 1851 to find the beginning of modern legislation on the housing question in London, so that, roughly speaking, both legislation and local action have arisen during the lifetime of the existing generation of Londoners. If we bear this fact in mind it should encourage us in regard to future progress.

It was in 1851 that Lord Shaftesbury (then Lord Ashley) brought the housing question before the House of Commons, and his efforts resulted in the passing of two statutes, the Common Lodging Houses Act, 1851, and the Labouring Classes Lodging Houses Act. Not only is it to Lord Shaftesbury that the perpetual honour belongs of directing public attention for the first time to this question, but he had the unique privilege of piloting these measures through both Houses of Parliament, for he succeeded to the peerage while this legislation was in progress. The first Act was passed with the object of improving the quality of the houses, the authority for that purpose being the Commissioner of Police and the Secretary of State, and it was not until 1894 that the jurisdiction of the former official was transferred to the County Council. By the second Act, it was proposed to increase the quantity of dwellings by enabling Local Authorities to adopt the Act and purchase, lease, or build such dwellings as were needed. Here then we have the germ of the important legislation which ensued to the end of the century to provide more dwellings for working men.

To return, however, to the quality of the houses; passing over the Nuisances Removal and Sanitary Act of 1855 and 1866 we come to the year 1868, in which year was passed the first of the series of statutes known as "Torrens' Acts." The main principle of the measure was that "the responsibility of maintaining his house in proper condition falls upon the owner, and that if he fails in his duty, the law is justified in stepping in and compelling him to perform it." The manner in which the owner was obliged to fulfil this duty was, broadly speaking, by the appointment of medical officers of health to report to the Local Authority, who then had jurisdiction to oblige the owner to do such work as was necessary, or even to demolish insanitary houses.

In seven years time we reach a legislative period which may be regarded as the contemporary or modern one, since in 1875 we come to the Artisans' and Dwellings Improvement Act, the first of the series known as "Cross's Acts." This Act dealt with "whole areas, when the houses are so structurally defective as to be incapable of repair." The authorities to whom the duty of carrying it was given were the Metropolitan Board of Works and the City Commissioners of Sewers. The main point to bear in mind in regard to this statute is that it is the beginning of the work which has been going on for the last quarter of a century for the wholesale rehousing of the working classes. The machinery for carrying it out was soon seen to be cumbrous, and in 1879 it was amended. In 1882 we find an important measure, the Artisans' Dwellings Act, 1882, to amend both Torrens' and Cross's Act, which again is a simplifying Act. Then from that time follow in due order the Housing of the Working Classes Acts of 1885 and 1890 and 1894. This review will give some kind of idea of the amount of legislation which has taken place during the last half century. Space wholly prevents the consideration of the details of these voluminous statutes. It is desirable, however, to endeavour to form some kind of idea of the practical results of this legislation.

In the first place the action of the predecessors of the County Council, the Metropolitan Board of Works, must be reviewed, which covers the period extending ftom 1875 to 1882. The number of schemes undertaken during this space of time was sixteen, which extended over an area of forty-two acres, and provided for 27,780 persons, as against 22,868 persons displaced. The actual cost worked out as follows:—Of property, 1,570,160*l.*; of works, 99,836*l.*; as against receipts, 346,581*l.*; leaving a total net cost of 1,323,415*l.* Between the schemes of the Metropolitan Board of Works and those of the County Council come some of an intermediate kind, begun by the one body and completed by the other.

These are six in number, and provided

*"The Housing Question in London."—Prepared to the order of the London County Council, under the direction of C. J. Stewart, Clerk of the Council.

accommodation for 2,930 persons though 6,188 were displaced. This curious discrepancy is explained by the fact that in one case the site was by Act of Parliament devoted to the purpose of an open space, and that in other cases the number for whom accommodation had to be provided was reduced by modification orders. Be that as it may, there is in regard to these six schemes the unsatisfactory fact that, apparently, over 3,000 persons were displaced and scattered into other districts already too crowded. The total net cost of these works was 281,673*l.*

We now come to the work which has been done, or is being carried into effect, by the London County Council. The schemes seem to be twelve in number. They affect an area of $34\frac{17}{40}$ acres. The total number of persons displaced by these schemes was 16,278, and the number actually rehoused 6,808, and to be rehoused 9,416. As regards expenses of the work, the total actual net cost to March 31, 1900, was 592,549*l.* In addition, schemes have been undertaken by Vestries and District Boards affecting a displacement of 4,042 persons. In addition the Council has undertaken various projects under Part III. of the Housing of the Working Classes Act, 1890, which is concerned—as many of our readers are aware—with what may be called lodging requirement. Under this head we find that there has been a supply of 2,132 tenements containing 5,012 rooms. It is impossible to enter into details of these schemes, but the entire work is apparently summarised in the table given with this article, taken from the appendix to the Report already referred to.

Considerable as is the work done, as pictured by these statistics, it is obvious, when the growth of London and its suburban districts is borne in mind, that it is comparatively little in comparison to the increase of population. We see that even with great expenditure of money and labour the requirements of the artisans of London can scarcely be coped with, and the conclusion to which one must apparently arrive is that while municipal effort should be increasing, as much encouragement as possible should be given to individual enterprise. It seems to be clear that the housing problem can only be adequately grappled with by the combined effort of public bodies and private companies, and therefore that municipalities should not crush out private enterprise. Those who are interested in this great social problem will find much that is valuable in the Report upon which the foregoing remarks have been based, and by a perusal of it better appreciate at once its magnitude and its difficulty.

HINTS ON STABLES.

BY A HUNTING MAN.

I WISH it to be clearly understood at the outset of this article that I am neither an architect, nor connected in any way with the building industry. I am writing without prejudice, and therefore trust that my remarks and suggestions will be construed in the same spirit in which they are written. My objects are to promote the welfare of the horse and to save the owners of horses unnecessary expense, which arises from inferior stable accommodation.

At the beginning of the century an ill-drained, ill-ventilated, ill-lighted barn was considered a good enough home for the average hunter. Even within the last twelve months I have seen many of these barns attached to old country houses, and I have inspected stables in London which are little better than cowsheds. In London and other large towns where economy of space is a primary consideration there may be some excuse for narrow gangways, narrow stalls, and narrow doors; but in the country there is no such excuse for placing valuable horses in erections which are the hot-beds of disease, owing to want of sanitation and space. Then how often are the situation and aspect of a stable misjudged. In the case of stables built at the beginning of the century we constantly find that they are situated in a valley on account of the warmth and shelter; but if the windows and doors fit properly and the ventilators act properly, so that there is no unhealthy draught, the question of shelter need not arise.

In regard to ventilation, there is a popular idea that ventilation merely means draught. A greater mistake cannot be made. The proper definition of ventilation is "the ingress of fresh air and the egress of foul air." Let us now consider what is the best method to ensure perfect ventilation in a stable. My own opinion is that there should be one or more according to the size of the stable, ventilating shafts in the roof, and one or more on each side of the walls. These should have "louvre" boards and cords to allow of them being opened or closed, as the exigencies of the weather may demand.* Furthermore, there should be ventilating gratings a few inches from the wall on all the walls, furnished with closing bars. I have only heard one objection to this system of ventilation, namely, that in many private stables, if there were a hundred ventilators, the grooms would never dream of opening one of them, and the stables would still be found reeking with foul air, laying the seeds for every imaginable form of lung disease. What does this objection amount to? It simply means that the owner of valuable horses does not employ servants upon whom he can rely to fulfil their duties. The groom who keeps his stable hot in order to make the coats of his horses shine is like the Chinaman who burnt his house so that he might roast his pigs.

The first thing which an architect has to consider is the *aspect* of a stable. The aspect should be south or south-west, so that the horses face north or north-east. The stable will thus gain the greatest possible amount of light with the least possible amount of glare to the horses. The situation of the stable should be on dry soil, when possible, but never in a valley. It is not necessary to build a stable in a low valley in order to obtain the temperature at which it should be kept, namely, 60 deg.

The construction of the outside walls of a stable has been the cause of much difference of opinion. If possible, that is to say if the stable is near to a quarry, they should be of hard stone, since bricks absorb moisture and cause the stable to become damp.† I am an advocate of corrugated iron, lined with wood, providing that there is ample space between the iron and the wood, which could be filled

* "A Hunting Man," however, does not state whether he intends these for inlets or extracts, and possibly does not know. If intended as extracts, probably some of them will be found acting as inlets. And what is to induce them to act as extracts? To adopt his own phrase, "there seems to be a popular idea" that it is only necessary to have openings, and the fresh air will flow in through one and the foul air out at another, just as you wish, without anything more than wishing. If no mechanical force is employed, the best chance is to have only *one* ultimate extract at the highest point of the building; there may be ducts to it from different parts of the stable ceiling. In large stables—those containing as many as ten horses and upwards—it ought to be worth while to have a mechanically driven extract fan, but it must be used with moderation, so as not to draw in anything like a rapid current of air through the inlets.—ED.

† This is, of course, far too sweeping a statement. It depends on the kind of stone and the kind of brick. Some bricks absorb much less moisture than many stones do.—ED.

Table Extracted from the Work on "The Housing Question in London," issued by the London County Council.

By whom the areas have been or are being dealt with or dwellings have been erected.	Unremunerative work.			* Remunerative work.									
	Extent of areas dealt with or being dealt with.	Number of persons displaced or to be displaced.	Estimated or actual net cost of clearances.	Number (so far as can be ascertained at present) of tenements of						Total number of tenements.	Total number of persons provided for or to be provided for.	Estimated cost of dwellings (including value or cost of land and all incidentals).	Gross rent receivable per annum in respect of tenements actually occupied.
				1 room.	2 rooms.	3 rooms.	4 rooms.	5 rooms.	6 rooms.				
	Acres.		£									£ s. d.	£ s. d.
By the Metropolitan Board of Works	$51\frac{139}{140}$	29,056	1,605,088	—	—	—	—	—	—	—	27,780	—	—
By the Council	$31\frac{11}{12}$	14,422	1,045,050	124	1,280	1,444	179	8	3	4,038	34,196†	1,221,418 8 9‡	35,164 8 0
By the Council and a Vestry or District Board	$3\frac{1}{8}$	1,855	69,750	—	—	—	—	—	—	—	—	—	—
By a Vestry or District Board and the Council	$8\frac{1}{60}$	4,042	178,728	—	—	—	—	—	—	—	2,052	—	—
By a Vestry	—	—	—	—	25	50	—	—	—	75	400	27,336 0 0	1,527 10 0
Totals	94†	49,375	2,898,616	124	2,305	1,494	179	8	3	4,113	64,428	1,248,754 8 9	36,691 18 0

* No work of this character was done by the Metropolitan Board of Works. Such figures as are given relate to what has been done by other bodies upon land purchased by them from the Board.

† Of this number, accommodation for 240 was provided by the Provident Association. The total also includes persons provided for in lodging-houses.

‡ This does not include any figures in respect of the Russell-court site, nor in respect of any rehousing in connexion with the schemes of 1899.

with sawdust or some other non-conducting material.* This provision is important, since, if a careless builder neglects to use sufficient non-conducting material, the corrugated iron will in hot weather turn the stable into a furnace. Some architects recommend painted cement in preference to wood for the inside lining of the walls, since it is easier to keep clean and is more economical; but there is an unsportsmanlike look about the cement,† and the appearance of wood is far superior to that of cement. Then horses do not care to live in a place resembling an Ebenezer chapel, and in the construction of our stables the horse is the first interest to be considered. In regard to the external construction of a stable, no subject has aroused such divergence of opinion amongst hunting men than that which concerns the roof. Many hunting men are in favour of a thatched roof, because it is warmer in winter and cooler in summer. But there are many objections to thatched roofs. In the first place, it is difficult to find a good thatcher outside Dorsetshire, and a badly thatched roof is useless. In the second place, they absorb more damp than any other kind of roof, as anybody who has had the misfortune to live in a thatched house can testify. Thirdly, they are expensive in regard to the initial cost, and constantly need repairing. Fourthly, they serve as breeding places for vermin. Fifthly, they are a source of danger from fire. The late Mr. Ruskin stated that they were a pleasing prospect in the landscape. I willingly admit that, to the artistic eye, a thatched roof is a pleasant appendage to a country parsonage, though the parson's fat cob may differ from me; but a thatched roof on a gentleman's stable always reminds me of a dilapidated farm-building. If we discard thatched roofs, we must alternate between slates and tiles. My chief objection to slates is that they generate more heat than tiles, while the ugliness is too apparent to require any comment from my pen. Good tiles, well laid, form the best roof of which I have had experience.

"Let the gutters from each stall or box run direct into one common gutter, which traverses the stable from one end to the other, and the further the gutter is extended beyond the stable in its open form before it is received into any underground drain the better. As far as stable drainage is concerned, nothing further is necessary." Such was the *dictum* of Major Fisher, as written in his admirable little book, entitled "Through the Stable and Saddle Room," and his words convey the necessary advice to those connected with the construction of stable drainage. It is my duty to warn my readers against the modern systems of elaborate drainage. The more simple the system of drainage is, the more healthy it is both for man and horse. Moreover, it requires a special education to understand the complicated sanitary arrangements which have been introduced into stables during the last decade. Simplicity and cleanliness should be the two most salient features of a stable. We cannot expect a stable-lad to keep in order drainage, when he is ignorant of the structure of the drainage.

A Hunt secretary, who is also a farmer and a breeder of horses, once stated to me that he only required the services of a veterinary surgeon in order to test the eyesight of a horse. Now, the bad eyesight of horses is invariably due to the misplacement of the windows in the stable. The windows of a stable should be behind the horses, facing south or south-west, unless the aspect be north or north-east, when the windows must be placed in front of the horses, and as near the ceiling as possible, so as to prevent any glare in front of the horses' eyes. Lattice windows are preferable to those made of squares of glass; but in either case they should be made to open upon pivots, and have holland blinds to shield the glare of the sun. One window to three stalls or loose-boxes is sufficient, unless the aspect is closed in by trees or other buildings. Whether or not there should be trees or shrubs in the vicinity of a stable has long been a controversial subject amongst the owners of valuable horses. My own experience is that verdure attracts atmospheric moisture, and thereby prevents the moisture from reaching the stable.

In reference to the internal structure, in the first place, let us consider the position of the forage loft. Should it be between the ceiling and roof of stable? Such a situation is the most convenient, so far as the grooms are concerned, and, moreover, serves to keep the stable warm. But in any case the forage should be stored near to the stable, and, wherever possible, in the same building. I recently considered some designs for stables in which the architect had placed the forage loft fifty yards from the stable. I will not refer to the extra labour entailed to grooms by such an arrangement, but how about the forage on a wet night? I should not like to eat my food sodden with rain water, and I do not think that my horses would care to do so. In regard to stables the horse is the first object for consideration, and yet how often do we see valuable horses ruined on account of inadequate stable accommodation! The stiffest fence in Leicestershire is a bagatelle when compared with a narrow stable-door. The door of the stable should be at least six feet, or, if possible, seven feet in width, since in passing through a narrow doorway horses are apt to knock themselves against the side-posts, and to do themselves serious injury. The doors should be half-doors, cut horizontally in the centre, and there should be no projections of any sort or kind whatsoever in the door. Sunken bolts and ring handles obviate any necessity for such projections, which are more liable to injure a horse than barbed wire.

The flooring of a stable should be of the hard corrugated or grooved blue bricks, specially manufactured for stable purposes. These should be so carefully laid that the grooves fit into one another, and thereby form a miniature system of drainage. The gangway should be as wide as space permits, but not less than 8 ft. in width, and the surface should be level. The slope of the surface flooring of a stall or loose-box has for many years been a subject of disagreement amongst men of the greatest experience in all matters connected with the stable; but, with the exception of the late Duke of Beaufort, who favoured a flat surface, the majority of hunting men consider that the gradient of a stall or loose-box should be $5\frac{1}{2}$ in. in 13 ft. I do not like to differ from such an authority as the late Duke of Beaufort, though in most hunting and racing stables the gradient which I have described is adopted. The reason for the adoption is obvious. If a rider wants to stand still by covert-side or anywhere else, and leaves the position to his horse, the horse will choose to place his forelegs on an elevation on a proportionate gradient to his hindlegs to the one which I have described. Surely, therefore, this gradient must be the most comfortable and the most natural for the horse. I may also add for the benefit of hunting men who may read these words, that when the surface is flat, horses contract the pernicious habit of "standing over."

I do not think that there can be any difference of opinion between the relative merits of stalls and loose-boxes. Unfortunately, space often prevents the use of loose-boxes, but it is easy to improvise them by placing strong bars of oak from the stall posts across the gangway to the wall. This is a method which I have often seen adopted in old stables. The economical objection to loose-boxes, namely, that they take more straw to litter them than it takes to litter stalls has long been exploded, since it must be apparent to everybody connected with stable management that the greater the space to be littered, the less amount of straw will be soiled, trodden upon, and have to be removed. In regard to size, twelve feet by thirteen feet is a fair size for a loose-box, and thirteen feet in length by eight feet in width a proper size for a stall. These dimensions may seem extravagant to some of my readers but they must remember that there is nothing more dangerous than for a horse, excited by the idea of leaving the stable, to be obliged to turn round in a narrow stall.

In regard to interior fittings, my primary statement is that there should be nothing superfluous in a stable, and that all the fittings should be as simple as possible. *Simplex munditiis* should be the motto for a stable, as our old friend Horace, who was the cause of many bad hours to me in my Rugby days, said should be the motto of ladies. The more superfluity that there is in a stable, the more dirt and dust, and the more things to be kept clean. Briefly, the greater the simplicity, the greater will be the tidiness. The stall partitions should be made of oak or pitch-pine boards; for it is false economy to use deal, which is liable to splinter, and has accordingly to be constantly renewed. These partitions are now made so as to be movable. Thus by removing the partition and putting up the oak bars already referred to on the two adjacent partitions, a loose-box, sufficiently roomy for the most capricious animal, can be made in a few minutes, and every hunting man will agree with me that after a long day the horse will appreciate the luxury. Space does not always permit of the erection of loose-boxes, though it is seldom that an owner of hunters does not possess a spare stall, by which, by the use of the movable partition, he can get a loose-box when required. The mangers in any stable should be made of enamelled iron, for wooden mangers tend to make horses crib-biters. Moreover, wooden mangers are not so easy to keep clean as those made of enamelled iron. One modern improvement which I strongly urge my readers to use is an enamelled basin or water trough, which can be bought and fixed in a stall or loose-box at a trifling cost, so that the horse can drink when he feels

* This may no doubt make a warm and comfortable stable, but few owners of large country houses would like to see their stable court disfigured by so hideous a material as corrugated iron.—ED.

† We should really be interested to know in what sense cement is "unsportsmanlike."—ED.

thirsty. The old habit of giving horses their water out of a bucket at stated intervals always reminds me of Fagin telling Oliver Twist to drink his gin-and-water because another gentleman required the glass. The stomach of a horse is not like the boiler of an engine, though many people fail to see the difference.

In conclusion let me state that there should be no cupboards in a stable, but only shelves upon which nothing but the grooming utensils should be placed. With the exception of a dung basket, the stable utensils should be kept in the saddle-room. But the architecture of the saddle-room would demand a separate article.

NOTES.

Tilers and Bricklayers. IN accordance with the new working rules, a Joint Conciliation Board meeting was held at the offices of the London Master Builders' Association on Monday, the 28th ult. There were present on the occasion five representatives of the London Master Builders' Association, three representatives of the Operative Bricklayers' Society, and three representatives of the Slaters' and Tilers' Union. The question to be considered was the claim put forth by the Operative Bricklayers' Society that its members should have the exclusive right to do roof tiling; and the questions submitted to the board were:—(*a*) Is roof tiling to be given exclusively to tilers? (*b*) Is roof tiling to be given exclusively to bricklayers? (*c*) Shall roof tiling be done by bricklayers or tilers, at the discretion of the employer? The result was that it was decided by the majority of the board "That it shall be left to the employer to elect whether he shall employ bricklayers or tilers to do roof tiling." This is the common-sense of the matter. It all depends on the character of the work to be done, and the necessity or otherwise of skilled labour; and of this the employer has the best right to judge.

The Tapestry Case. IN our note on the Luton Hoo tapestry case when it was decided by Mr. Justice Byrne, it was pointed out that the reasoning by which it was held that the tapestry in the drawing-room was a fixture, and belonged to the freehold, was fallacious. The decision has now been reversed by the Court of Appeal. There appears, however, to be a tendency to attribute too wide an inference to the new decision, and to regard it as having extended the law by giving greater liberality to it in regard to the rights of tenants for years or for ever as against a freeholder. No doubt law always reflects, sooner or later, the general feeling of the community, and public opinion is distinctly in favour of limiting the rights of freeholders to property for which they have not paid. This is most noticeable in agricultural tenancies, but the same trend of public opinion is reflected in such a decision as that of the Court of Appeal on the Luton Hoo case, in which the Judge of First Evidence took a narrow and technical view. At the same time, where there is any possibility of disputes arising as to what is or is not a tenant's fixture, it would be desirable for tenants to obtain a written license from the freeholder to erect fixtures, with the condition that they do not belong to the freehold. It is obvious that as long as the law on this subject remains in its present somewhat indefinite condition, there must always be a certain danger of disputes. No doubt some class legislation on the subject is desirable by which the rights of tenants would be clearly defined and safeguarded. But modern legislation is so confused and muddled—as witness the Workmen's Compensation and other Acts—that it is sometimes worse than the evil which it is intended to remedy.

Linlithgow Palace. THE proposal to restore Linlithgow Palace as a memorial of our late Queen seems to us a rather foolish one. There is no suitability in it as a memorial to Queen Victoria; the name of the place will always be connected historically with that of a feminine royalty of a very different type; and as a matter of archæological interest it would be a great deal better to leave the building as it is instead of "restoring" it into a modern building. All that seems necessary is to provide against its further decay.

New Railway Bridge at Newcastle. ALTHOUGH the casual visitor to Newcastle may find little temptation to cross the river in search of the beautiful, there is, and has been for years, urgent necessity for more adequate means of railway communication between the banks of the Tyne. Apart from the heavy toll payable by the railway company to the owners of the High-level Bridge, this structure notoriously offers insufficient accommodation for the heavy local and main line traffic of the present day. Moreover, its position with regard to the Central station renders necessary for through trains a change of engines, causing expense and delay to the railway company, and a reversal in the relative position of the carriages, causing discomfort to many passengers. A second railway bridge, with four sets of metals, is now to be built, crossing the Tyne from Gateshead near the Redheugh bridge, and entering the passenger station at the western end. The new structure is to be of the lattice girder type, having two spans resting on a central pier of granite. On the south side of the river the approach will afford communication with the main line a little below Gateshead Station, with which connexion will be made by means of a loop line, so that the utmost advantage may be derived from the addition of the new bridge. Each span of the bridge will be about 300 ft. long, the total length being 675 ft., and the height above high-water level to the lowest rail of the bridge is to be 85 ft. The structural details of the northern approach are not yet finally settled by the engineer.

Chippenham Wesleyan Church Competition. A CORRESPONDENT writes:—"I presume that the leading architects of Wiltshire are working hard to obtain the tempting bait held out to them in the enclosed advertisement, cut from the *Wiltshire Times* of February 9 inst." The following is the advertisement referred to:—

"TO ARCHITECTS.—The Trustees of the proposed New Wesleyan Church and Schools at Chippenham invite Pencil Sketch of Buildings, including Elevation, Ground Plan, and Section. Terms: Ten guineas for design selected, the same to be the property of the Trustees, without prejudice to any future action."

The hon. secretary to the Committee is the minister. We are inclined to think a clergyman of the Established Church would have known better than this, at all events.

The Great Seal. WE understand that Mr. Allan Wyon, F.S.A., chief engraver of his Majesty's seals, has received instructions for the making of a new Great Seal. Mr. Allan Wyon is the third son of Benjamin Wyon, who in 1831 succeeded his father, Thomas Wyon, as chief engraver of his Majesty's seals, and was succeeded in that appointment by his three sons in turn—Joseph Shepherd Wyon in 1858, Alfred Benjamin Wyon in 1865, and Mr. Allan Wyon in 1884. The Wyon family were originally of German extraction, and reckon amongst their members the Court jeweller of King George I., Thomas Wyon the younger, chief engraver at the Mint, and his successors at the Mint Leonard Wyon and William Wyon, R.A., F.S.A.

Coldbath Fields Prison. WITH the demolition, now in progress, of the massive gateway and the Governor's house at Mount Pleasant, Clerkenwell, will disappear the only remaining portions of the old prison that was closed in November 1885. The stone gateway, having a lion's head and rusticated voussoirs around the arch and inner piers in the archway, is the last of its kind in London. It has retained the original doors with their two big iron knockers, but the linked fetters on the outer piers and the inscription beneath the cornice —"1794 Middlesex House of Correction 1866"—have been removed. In pursuance of the Act 26 Geo. III., c. 55, the erection of the prison was begun upon a site of marshy ground, nine acres in extent, bounded along its west side by the Fleet, which the county magistrates bought for 4,350*l.* from Thomas Clarke Jervoise. Plans and designs for 232 cells were prepared by Sir Robert Taylor, after whose death in 1788 the works were carried on by Sir William Chambers in 1788-91, and then after Chambers's death in 1796 by T. Rogers. The prison, first opened in 1793, was enlarged and remodelled in 1830 by Robert Sibley with five blocks radiating from a common centre, to the north of the older buildings, and on such a scale as to render it the finest and one of the best appointed gaols in the kingdom, with a capacity latterly for 1,558 prisoners. On the east side, in a detached building, was the great treadwheel for grinding corn (since removed to Pentonville), with room for 350 at a time of the prisoners condemned to hard labour for periods known as "short sentences"—two years or shorter. Upon the removal of the prisoners to Pentonville protracted negotiations ensued between the Clerkenwell Vestry, the Home Office, the late Metropolitan Board of Works, and the London County Council in respect of a project to secure the ground, partly as an open space and partly for the building of artisans' dwellings. In the result the site was acquired under the Post-office Sites Act, 1889, at a valuation of 96,000*l.*, and a payment of 10,000*l.* to the London County Council in lieu of the reservation of any portion of the land as a recreation ground, for the Parcels and Telegraph Engineering Works services of the Post Office. In June last year the Provincial Mails service migrated from St. Martin's-le-Grand to the premises erected there, at a

cost of about 113,000*l.*, by Messrs. Lorden of Upper Tooting, contractors.

The Late Mr. J. M. Robertson.

ADVERTING to the obituary notice in our last issue, pp. 142-3 *ante*, of the late Mr. John Murray Robertson, of Dundee, we may mention that in our number of August 13, 1898, "Dundee," being No. XVII. of our series, "The Architecture of our Large Provincial Towns," we published illustrations of the Fyffe's Buildings in the Nethergate, the Lochee Free Library and Baths, the Caledonian Insurance Company's offices, and the Technical Institute—all erected after his plans and designs.

Carpenters' Hall Lectures.

THE usual series of lectures at Carpenters' Hall will commence on Thursday evening the 21st inst., with a lecture by Mr. H. H. Statham on the architecture of the recent Paris Exhibition, illustrated by lantern views of a number of the buildings, permanent and temporary. The lecture is not intended to be merely descriptive, but for the critical consideration of some points suggested by the treatment of the Exhibition buildings. The succeeding lectures will be by Mr. H. C. Richards, on "Old London" (February 28); by Mr. John Slater, on "Celebrated Ancient Buildings" (March 7); by Mr. W. E. Riley, on "Dwellings for the Working Classes" (March 14); and by Professor T. Roger Smith, on "Westminster Abbey" (March 21). The lectures commence at eight o'clock.

Royal Academy Exhibition.

THE receiving days for works sent in for exhibition at the Royal Academy this year are:—For water-colours, miniatures, black-and-white drawings, engravings, etchings, architectural drawings, and all other works under glass, Friday, March 29; for oil-paintings, Saturday, March 30, and Monday, April 1; for sculpture, Tuesday, April 2. We may remind our readers that architectural drawings must all be sent in gilt frames; any other frames are not admissible.

PORTSMOUTH TECHNICAL INSTITUTE AND LIBRARY.

THE designs submitted in competition for the proposed Technical Institute and Free Library have been on view at Portsmouth Town Hall this week. The competition was limited to architects practising in the town, and involved an estimated expenditure of 43,000*l.* Six sets were received; we have already published the names, together with the award of the premiums (see "Competitions" in our issue of January 19).

The circumstances of the contest are somewhat unusual, and considerably to the advantage of the architects, as the Corporation engaged the services of Mr. A. W. S. Cross to act as the assessor, and he prepared sketch plans, outlines of which were furnished to the competitors This was no doubt a wise course to adopt, as otherwise probably it might have been difficult to have locally obtained a satisfactory plan. The competitors were directed generally to follow the lines of the plans as laid down, it being open to them to make what minor modifications might commend themselves.

All six designs are therefore practically identical, no one competitor caring to launch out. This is somewhat remarkable in regard to one special feature—the entrance; no design attempts to make this an element in the plan, and coming at the angle of the site it is of considerable importance.

The site is a fine one, situated west of the Town Hall, and now occupied as an ornamental garden; it is bounded on one side by the railway embankment, and on the other by Park-road, to which latter it has a frontage of 180 ft., and of 160 ft. to the Town Hall, forming an __ shape, with the entrance at the angle.

The general disposition of the plans is as follows:—Entering from Park-road at the corner, the building is bisected by a corridor both ways, the staircase being opposite. In the right wing is located the free library—reference library, store and engineering-room being in the basement. The first and second floors provide an examination-room, which is also available for banquets in connexion with the Town Hall, and an elementary art room. The left wing contains in the basement the building-construction and engine rooms, &c. The ground floor has a range of ten class-rooms and other offices on either side of the corridor, which is lit from the end, and is about 150 ft. long by 8 ft. wide, with caretaker's-room in a wing at end. The first and second floors have in front the physical laboratories, lecture-rooms, &c., while the art rooms are situate at the back, which has a good north light. Two lecture theatres come over the entrance, while cart access is provided at the rear.

This is the plan which all of the competitors have adopted, with but slight modification, and no one has grappled with the dislocation of the sanitary adjuncts, which are all within the building, or the architectural treatment or plan of the entrance.

The problem, therefore, submitted was tempting, and comparatively easy of solution in having merely to modify the plan and clothe it architecturally, and that the result has not been more satisfactory is a matter for some surprise, as no design submitted shows any high and unquestionable merit.

The first premium has been awarded to Mr. G. E. Smith, who follows the sketch plans; but the details are not wholly free from defects, the supervision of the library being imperfect, and the entrance doors, which are at the head of a long flight of steps, are inadequate. On either side are two great bay-windows partially treated as sash frames, the upper half being lead lights; angle turrets abound, which are utilised as recesses. A tower encloses the staircase at the rear, but would not be seen, at all events, from the point of view indicated. In regard to details the scheme may be a good deal improved. The elevations are brick and stone banded, with many breaks, projections, and turrets, and the fronts to the streets suffer greatly from a profusion of irritating ornament. For economy's sake this has been omitted on the back elevations, very greatly to their advantage. The design is illustrated by an admirable perspective, which gives a pleasing interpretation of the design, but will not bear investigation.

Messrs. Rake & Cogswell are awarded the second premium; this is a more spirited, though evidently hurried, design. The entrance is by a circular porch. The wall above is carried up and finished with a curved pediment, the angle being filled with splayed piers, with cappings; these not running into the pediments having an inconclusive effect. A lofty turret is carried up on either side, projecting at the top and much overweighted. It is clear from the plan that these features are impracticable, as a 14-in. iron column is being carried up on either side to produce them over the lecture theatres. The fenestration is deficient, the windows being ranged in a diminishing scale, which makes the laboratories on the top floor very dark. The examination-room is more effectively treated than in the first design, in view of its municipal use. The spacing of the façades is well considered, and the stonework agreeably grouped, with a pediment at either end, with the intermediate spaces divided by pilasters, makes up the two fronts. Parts of the plan are dark, such as the lavatories and the students' locker-room. The arrangement of the library is, however, good. The design is effectively shown by a pen-and-ink perspective sketch.

Mr. W. C. Bevis, who is awarded the third premium, has some good points in his plan, and the arrangement of the library is certainly the best submitted—the book stores being kept at the rear, and all well lighted, with the news and magazine spaces in front, all under visual control. The entrance hall in the plan has received some slight recognition, two alcoves being formed, one of which affords convenient access to the basement. The treatment of the angle is the especially weak point in the design, an error which is apparent in all the designs to a certain extent excepting the first, in cutting the building into two. In this instance, a portico and two segments, surmounted by a stone balcony and turret, attempt to fill the space of the angles, but do much to mark the distinction the more. The building is seen to better advantage in the scale drawings than in the view. The elevations in this have been extended in every instance but one, without any real gain. The theatres are well-planned, and careful attention has been given to the fenestration.

Mr. C. W. Ball has his design evidently illustrated by the same artist as in that placed first, and it is noticeable that the perspective and elevations do not correspond as they should. Judged by the former, it is generally one of the best designs. The frontage to Park-road is, not unreasonably, treated in a different phase, being divided by a pediment treatment at the far end, and the intervening space by two curved pediments, the resultant being a crowded effect. The Town Hall front is quiet and satisfactory, and with a feeling of repose which but few have sought after; but the contrast between the two calls for some elimination on the Park-road elevation. The entrance is treated on a plane, within a curved pediment and porch, the fenestration over is not happy, the whole completed by an octagon and dome; but it requires more connexion to be entirely satisfactory. The library seems to be divided by solid partitions, which would not be desirable, and the lighting generally would require re-consideration.

Mr. A. E. Guy's design is the most pretentious of any. The chief point about the plan seems to be the complete system of heating and ventilation. The lecture theatres are on the reverse plan to the others shown, the lecturer being placed back to the light. The elevations and perspective do not call for remark, being of a nondescript character.

Mr. J. Walmisley submits a carefully-prepared set, and a good line perspective. The building looks suitable for its purpose, and has gables with stone tops of a rather commonplace type now in vogue. The porch on the Town Hall side is brought up to the path, contravening the instructions. The Park-road front has been kept at a higher level, and the whole effect as one building is satisfactory, although the windows have a wiry look.

We have before called attention to the question of perspectives in competitions; there is something to be said for them at times. They do not, however, influence an assessor's choice; but this is one of those rare instances where architects of good local repute might have been asked to submit perspectives without elevations, for more often than not the one or the other is delusive.

COMPETITIONS.

CARDIFF NEW ASYLUM.—The award in the competition for designs for a new asylum which the Cardiff Corporation have decided to build on the Velindre Estate, near Whitchurch, was made on Thursday last week, when Mr. George T. Hine, the assessor, placed first the designs of Messrs. George H. Oatley and W. S. Skinner, of Edinburgh Chambers, Bristol. Fifty-four architects had submitted plans, and five had been selected for the final decision. They were Messrs. Oatley and Skinner, Bristol; Messrs. Law and Allen, Arundel-st., London; Messrs. Greenaway & Newbury, Queen Anne's-gate, London; Messrs. Hooley & Sander, Nottingham; and Messrs. Wills & Anderson, Swansea. Messrs. Oatley & Skinner were appointed the architects to carry out the work at a commission of 5 per cent. on the contract. Their estimate is that the work will cost 235,000*l.* Each of the remaining four competitors named will receive a premium of 100 guineas. The accommodation is for 1,250, but it is proposed to open wards for 800 patients only at first. Mr. Hine announced that all the five named competitors had complied with the conditions, and that the standard was high.

UNION HOSPITAL, PATRICROFT, LANCASHIRE.—On the 6th inst. the new union hospital at Pratricroft, erected by the Barton Board of Guardians, and situate adjacent to the new workhouse, was opened. The buildings were erected as a memorial of the Queen's Jubilee. The plans were prepared by Messrs. Worthington & Sons, architects, Manchester, and provision is made in the male and female wards for 200 beds. The contract for carrying out the work was entrusted to Messrs Gerrard & Sons, builders, Swinton, and the cost has been considerably under 20,000*l.*

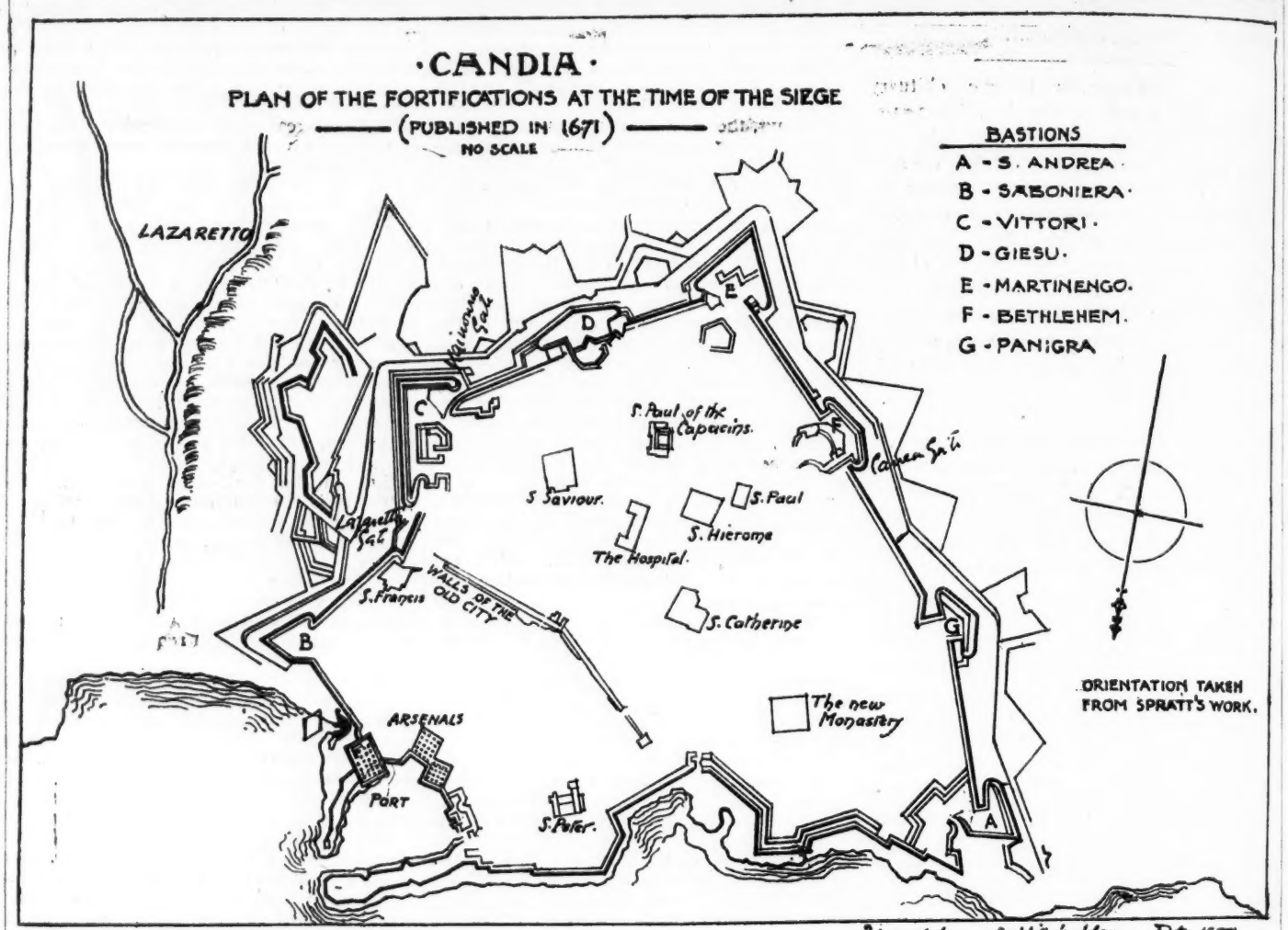


Fig. 1.

THE ARCHITECTURAL ASSOCIATION.

AN Ordinary Fortnightly Meeting of this Association, deferred from the 8th instant on account of the Queen's death, was held on Friday evening last week in the Meeting room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, the President, Mr. W. H. Seth-Smith, occupying the chair.

The late Queen Victoria.

The minutes of the previous meeting having been read and confirmed, the President said: "I think it will be in accordance with the wishes of all of you that the Architectural Association, at its First General Meeting after the death of the late Queen Victoria, should pass a vote of condolence with the King and with the Royal Family [the members of the Association here all rose from their seats and remained standing until the President's motion was agreed to]. The Architectural Association cannot boast of Royal Patronage. Your committee, therefore, felt it might savour of presumption to send a tribute to the Queen's memory in a form such as that which it became the Royal Institute of British Architects to offer. The members will, however, I am sure, feel that this occasion must not pass without a public record of the profound sense of loss we, as a public society, in common with every one of our fellow subjects, have sustained by the death of Queen Victoria. Every man must acknowledge himself the poorer and at the same time the richer. We have lost a Mother in the highest sense; but has she not bequeathed us a fortune and a great one for all who recognise that man does not live by bread alone? That life, early consecrated by resolute will to the service of its author and its fellow men, has realized the ideal of religion and of ethics, and of public, domestic, and social duty. The throne of the greatest Empire the world has yet seen is a point towards which the eyes of all men are naturally directed, and when that exalted position is occupied by a life lived on a plane altogether higher—intellectually, morally, and spiritually—than that which mankind is accustomed to witness, it must wield an incalculable influence for the progress of the race. It is this which makes Queen Victoria's life so rich a gift to mankind, so great an inheritance to the British Empire. A gift, which if made good use of as an ideal of womanly character to our men and as a pattern to our womanhood, cannot fail to make us true to our vast responsibilities as the teachers and rulers of so large a proportion of mankind. The King has, we consider, during his many years of gracious and generous devotion to the interests of the public, shown a desire to encourage art by every means within his power, and we welcome in him one whom we may surely hope will help to give architecture the place in the public estimation which its greatness merits, and who will in particular use his royal influence to further the better training and organisation of the profession. I will, therefore, move that the following respectful address of condolence be forwarded to His Most Gracious Majesty the King:—

'May it please Your Majesty,

We, the President, Committee, and Members of the London Architectural Association at our first General Meeting since the lamented death of Your August Mother beg leave very humbly to offer to Your Majesty and to the Members of Your Family our profound sympathy and sincere condolences on the irreparable loss which you and Your Empire have sustained by the death of Your August Mother, the late beloved Queen.

At the same time we would venture to hope that Your Majesty will be graciously pleased to accept a dutiful assurance of our devotion and affectionate loyalty, both to Your Majesty's throne and person and to the Members of Your Royal House.'"

The address was signed by Mr. W. Howard Seth-Smith, the President, and the Members of the Committee.

The motion having been agreed to, the Chairman said that owing to an engagement made before the date of that meeting had been changed from the 8th to the 15th inst., he would not be able to remain for the rest of the evening; and he would call on the senior Vice-President, Mr. W. A. Pite, to preside.

Mr. W. A. Pite then took the chair, and the following gentlemen were elected members of the Association, viz.:—Messrs. A. F. Benjamin, W. J. Brough, B. A. Everitt, A. H. Fleuss, A. P. Lambert, and E. E. Temple. It was also announced that Mr. T. Davison has been reinstated a member.

A vote of thanks was accorded to Messrs. G. Bell & Sons, the publishers of Mr. R. Blomfield's book entitled "A Short History of Renaissance Architecture in England," for presenting a copy of the work to the library.

It was announced that the first spring visit will be made on the 16th inst. to the Roman Catholic Cathedral and Cardinal's House, Ashley-gardens, Victoria-street, Westminster, by permission of the architect, Mr. J. F. Bentley.

Architecture in Crete and Turkey.

The Chairman then called on Mr. D. T. Fyfe to read a paper on "Architecture in Crete and Turkey," remarking that Mr. Fyfe was well known to most of them as a former Architectural Association travelling student, who had since had the honour of being sent out to Crete to take part in the recent excavations there.

Mr. Fyfe then read the following paper:—

"Like all Greek lands, Crete belongs to the dawn of history, and is rich in remains of that Mycenean civilisation, about which so little is known. This period, however, belongs more to the domain of archæology than of architecture, as also, in the case of Crete, do the Greek and Roman periods; their remains being so scanty as to afford little architectural interest. After the decline of the Roman period the island was conquered by the Saracens in A.D. 820; then by the Byzantines in 961; but to Venice belongs the chief mediæval period, which lasted from 1204 till the final conquest by the Turks in 1669. The island in its most representative aspects is Venetian. Under the Turks how rebellion followed rebellion is matter of well-known history.

It is certain that Crete held an important place in the Early Ægean civilisation. Homer mentions it as a land of ninety cities, from which we can infer that it was highly populated. The sites of many of the Homeric cities have been identified, and are now partially disclosed, notably, Knossos, Gortyna, and Ghoulas. In their construction we notice the same characteristics which are displayed in the Palaces of Tiryns and Mycenæ, in the mainland of Greece, excavated by Schliemann and Dr. Dörpfeld, &c. In all are the same mud (or rubble and mud) walls, mysteriously

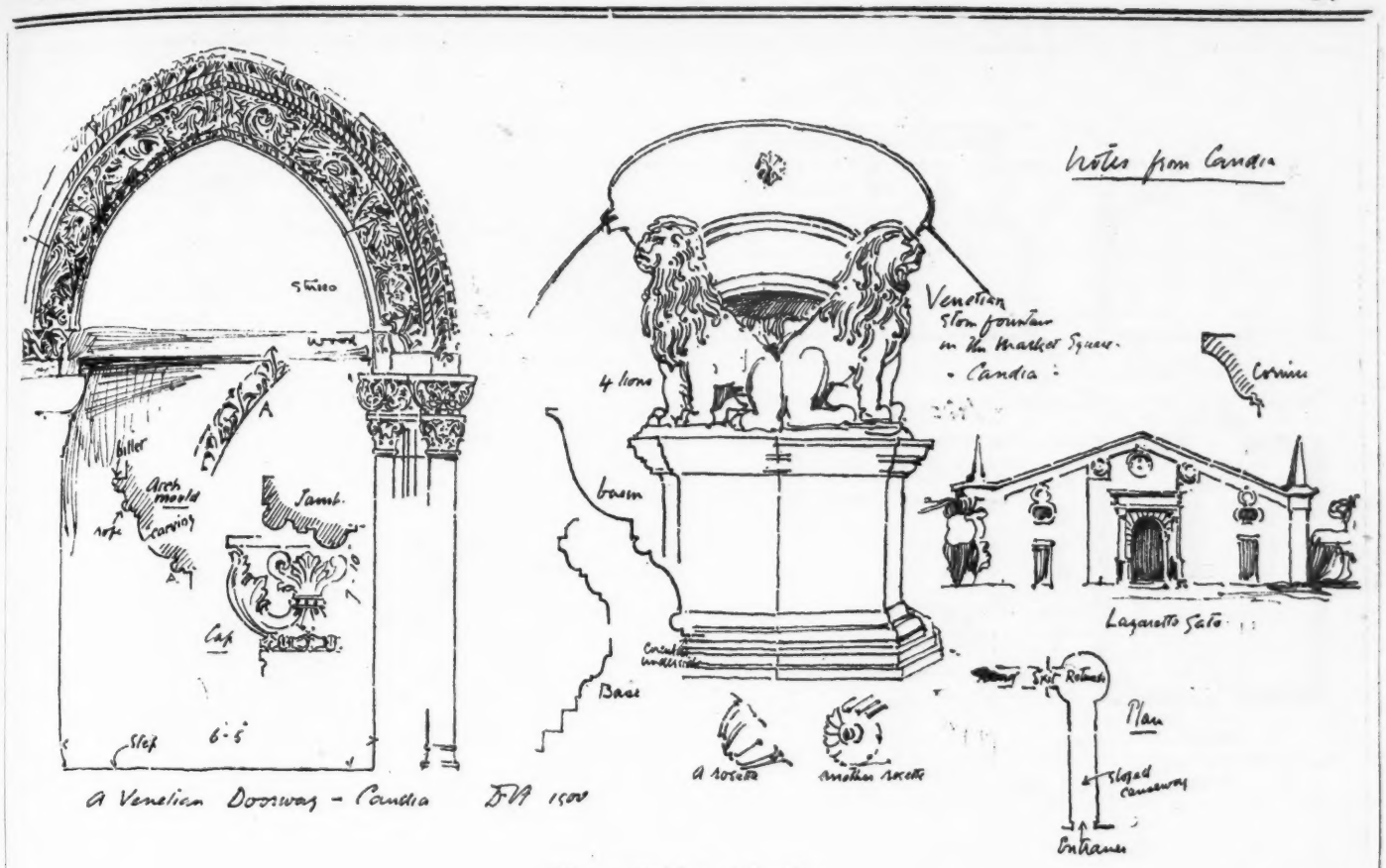


Fig. 2.—Sketches at Candia.

appearing to be contemporary with Cyclopean masonry; the same circular stone column-bases and paved areas. Only Knossos has produced some entirely new forms of architectural plan and detail, and such a collection of painted stucco, both existing on the walls and in fragments, as to make it quite unique in the Levant. Looking at this stucco as a means of decoration, it is noticeable that two distinct scales seem to have been employed; one, comparatively easy to appreciate now, consisting of life-size representations of figures, bulls, gryphons, &c., or conventional representations of landscape; the other consisting of very small objects or figures produced in a more brilliant style, and found in such small fragments as to make it hard to understand how it could have been used. From this latter variety some very interesting architectural representations are apparent, which help to elucidate the subject of Mycenean building. The art displayed at Knossos is the complete fruition of the genius of the time. Though some of the finds at Vaphio, in Greece, are quite as artistically mature, a comparison of Knossos with either Vaphio or Mycenæ is futile at present, as so much of the treasure of the latter comes from the tombs, which in the Cretan site have not as yet been discovered. But in the palace itself enough has already been found to show that in this reputed home of the art of Dædalus, a very keen, strong perception of natural forms existed, and a direct getting at nature behind an indefinable veil of conventionality, which gives the art of this epoch a distinct value of its own. In building, the outer walls, which may have been more or less fortifications, are based on ponderous squared blocks of gypsum, which weathers with water grooves, like the hard culcareous substance of a cave. The bases of many walls in limestone and gypsum have been found very accurately levelled and laid out, but it still remains a problem in many cases whether the superstructure was of the same substantial material or of mud to take stucco work. Nothing of direct evidence has been found to point to the existence of later Greek or Roman settlements over this primitive one of the palace at Knossos, though many Roman fragments exist in the vicinity. The site of Ghoulas is an Acropolis much more approaching the wild and inaccessible character of Mycenæ than the refined and civilised Knossos. Splendid polygonal masonry exists here, forming ramparts up a steep hillside which overlooks a truly Greek prospect of hill and plain. And here also are picturesque evidences of a later Roman settlement on the Acropolis itself. But Crete has no prominent Roman architectural remains above ground that would bear comparison with those of Italy, Greece, and Asia Minor, and be of much help to the student in his search for the historic links which bind the Imperial Art to the Romanesque and Renaissance of later times.

Coming to more modern times we notice also that Crete has passed through so many vicissitudes, and fire and sword have wrought in it such havoc, that its present day can show but little of permanent architectural value above ground. Whatever it was in early times, both under the Venetians and the Turks, it formed but an outpost station, very liable to attack; so it is not surprising if the engineering of walls, and the useful side of architecture generally, form a large part of what is to be seen in the island to-day. Owing to the fusion of periods of the dominant mediæval power and the later conquering Islam, Candia, the most important historical town and the capital of the island, presents in its picturesque aspect an Eastern town with white walls and minarets, combined with massive sea-walls and fortifications. One can sail close in round the harbour in a small boat, and see as a sign the lion of St. Mark high up in frowning walls, and afterwards, on landing and traversing the market, be bewildered by all the strangeness of an Eastern town. This is true, of course, all over the Levant. The conquering Turk was an interloper and a barbarian, who settled down amidst the cultured evidences of mediæval times; and so from Constantinople, downwards in the scale, one finds the same thing—the dome, minaret, and whitewash of the Turk side by side with the grey stonework of the conquered Christian races.

The more modern architectural remains of Crete include:—1. Churches and monasteries in a pseudo-Byzantine style, similar to those met with in the country districts of Greece. 2. Buildings of the early Venetian period, in which the pointed arch was employed. 3. Later Venetian buildings in a provincial Renaissance style. 4. Turkish buildings, which are mainly domestic, and in plain stucco. The town of Candia contains examples of all of these, except the first, though it has also been sadly deprived of much that was apparently interesting of the Venetian period. I shall give some description of Candia, and then indicate what I saw of other work. The great defence of Crete against the Turks in the seventeenth century was a matter of such interest to the Christian Powers of Europe, that we fortunately possess some literature on the subject, and contemporary plans of the fortifications of Candia, the siege of which lasted for more than two years, and became one of the most memorable in history. I have here a plan of that time made by a French Admiral, the Marquis de Ville, who commanded a relief expedition. This plan will serve to show to the curious the nature and extent of the original fortifications (fig. 1). Many of these, especially on the north side, exist to the present day in a good state of preservation; and some of the photographs I have will indicate their character. It will be seen from the plans, that the nature of the harbour has been taken advantage of much in the same way as at Rhodes; and the fortifications of the two towns resemble one another, both being more irregular than those of Nicosia in Cyprus, a plan of which was published in the *Builder* recently. The Candia walls are good examples of their class, but they have no prominent towers and no decorative details of interest, except the occasional panels with the Lion of St. Mark before alluded to, and a few small carved coats of arms. So they are probably inferior in general interest to those at Famagusta, in Cyprus, and those at Rhodes. There are three principal gates in existence, all Renaissance of the Venetian period: the Canea Gate, the *Kainourio*, or 'New' Gate, and the Lazaretto Gate (see lithograph). This last is probably the most interesting of the three, and has a long vaulted passage from the ornamental inner gate to the outer entrance. This passage is barrel-vaulted in rubble and descends pretty rapidly towards the outside. It turns sharply to the left at the end, so that there is an intersection, over which is a dome lit with a single eye; thus when the outer gate was shut the passage would not be in darkness. The form of the inner gate, with its pediment, is quaint; but the details are coarse and in no way improved by much whitewashing. The part of the wall at this gate was perhaps the most impregnable, as it commanded a very deep moat, owing to the rapid slope of the ground towards the sea. The level square of the town inside the gate (shown in the lithograph) is raised artificially, and a few steps ascend to a platform which juts out beyond the main line of wall, being built upon a forework which originally protected the bastion here. The raised plateau is now the Public Garden, and commands a fine, though limited, view seawards and a good sight of the walls. To return to the other gates. The *Kainourio* is more commonplace than the Lazaretto, but is of naked stone, and has a good quiet cornice. It forms the entrance to the town from the interior of the island, and the present roadway really crosses what was the moat of mediæval times. It has also a

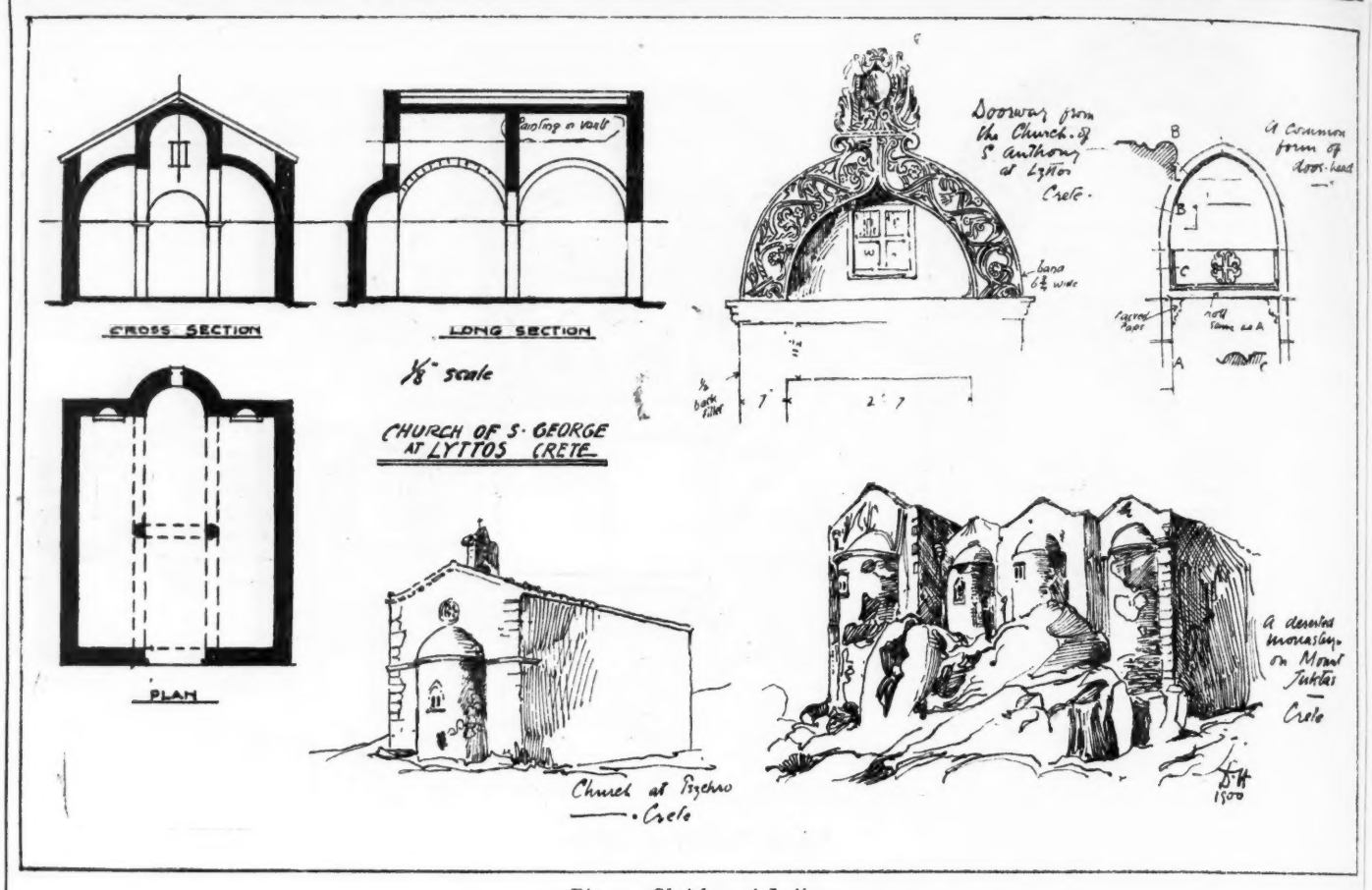

CROSS SECTION
LONG SECTION
⅛" scale
PLAN
CHURCH OF S. GEORGE AT LYTTOS CRETE
Doorway from the Church of S. Anthony at Lyttos Crete.
A common form of door-head
Church at Pizhaio Crete
A deserted monastery on Mount Juktas Crete
1900

Fig. 3.—Sketches at Lyttos.

long vaulted passage from inner to outer gate, though not so remarkable as the other.

The Canea Gate has even less of architectural interest than the other two, and I do not possess any illustration of it. It has no vaulted passage, being merely in the thickness of the wall, and it leads to the high road that runs eastwards along the north shore of the island, towards Retimo and Canea.

Leaving the walls and gates now, and entering the town by the harbour, we see first the remains of the great arches of Venetian Gothic which formed the arsenals of the mediæval town. They are marked thus on the old plan, and were, no doubt, complete before the great siege. Now, in their ruined state they are used as boat slips. The responds which exist on the back wall show that there must have been ribbed and groined vaults here, and the piers that exist are massive enough to show the large scale of the whole. Leaving the harbour, we pass up a sloping street to the centre of interest—the market square—at the highest part of the town. Streets radiate in all directions, but the interest here is diffused, and the square is only a quiet aside. The throng of the markets is at another meeting of streets a few yards from it, surrounded by low, squalid buildings, with here and there a crazy, whitewashed dome. The market square, however, has a fine old Venetian fountain in the centre, surrounded by a Turkish marble and wrought-iron grille (see lithograph); and from this point can be seen, partly hidden by a large plane tree, the only large building in the town of any character—the old Venetian Renaissance armoury (see lithograph), now proposed to be renovated and used as a museum of antiquities. This building is a very good example of its period, and exhibits, as do other little things in Candia, many of those quaint provincialisms which so often delight the careful eye in architectural by-paths. The proportions and details are alike good, and admirably in scale with the general air of the town. A crowning balustrade is rather wanting somehow, though its addition might take away from the Venetian character of the building. White stone is the material used, but the lower story has been whitewashed—a favourite trick of the Turk everywhere. The smallness of the rustication is noticeable. At the rear of the building, otherwise plainer than the front, are some quaint metopes in the Doric frieze, representations of weapons, &c., carved with great boldness. The other Renaissance work in the town is fragmentary, but the Turks largely adopted details of the late Venetian occupation, which causes some confusion. The Gothic work in the town, or rather the 'pointed arch' work, is in some cases even more difficult to analyse, as the Turks are always at home with the pointed arch, so that the Venetian Gothic and the Turkish work are not always readily distinguishable. Both of them have probably a Saracenic origin. Venetian Gothic is certainly quite a unique flower in architecture, and perhaps belongs properly to the East, as the Turkish work undeniably does. There are one or two charming fragments of Venetian Gothic in the town, enough to show what might have been under a more fortunate dispensation. The doorway, of which I have a sketch, is a good example (fig. 2). The capitals at the impost show Byzantine and Classic influence, and are beautifully detailed. The sturdy stone fountain of lions in the market square (fig. 2) is quite a treasure, with large and generous treatment of basins and mouldings. The Turkish grille surrounding it, though it rather hides the older and better work, gives it additional dignity. The form of the grille is probably governed by the old carved marble panels of Roman or Byzantine time which are built in at the base. In the new upper part a light grey marble is used for the framework, sparingly decorated with gilding and green paint. Here should be mentioned the only Gothic church in the town which is still standing. It is now used as a mosque, but is evidently the building marked as St. Saviour's in De Ville's plan. It has no pretensions whatever, being merely a barn-like structure, with high, narrow, pointed windows, all perfectly plain. It has a stumpy Turkish minaret of pleasantly original design. This mosque is illustrated in Pashley's 'Travels in Crete.' I have, unfortunately, no illustration of the wall fountain in the little square beside this mosque, which is the only example I know in Candia of Roman work being built into a wall by later hands, and which is so commonly seen and often so charmingly effective in Rome and Constantinople. The Candia fountain has merely a quaintness caused by broken-nosed statues and battered columns, associated with some common-sense mouldings. Of Turkish work one of the best old fragments is the series of arches in the main street leading up from the harbour. It much resembles the boat-slips at the harbour, but has one or two tricks of Turkish detail (see lithograph). The Turkish fountains are mostly at the corners of the streets, and, generally speaking, are hardly worth taking note of; but in one or two cases the simplicity of the mouldings deserves attention. Turkish work, when it redoubles on itself without other influences, has a tendency to over-elaboration, and most of the great show fountains of Constantinople are glorified grottoes in their total effect; so that it is refreshing to come across some things in this little provincial town which, either from poverty of workmanship or uncertainty of style, are simpler and broader in treatment. The little corner kiosk illustrates the better class of Turkish bijou in Candia, and though it is small, has some claims, if one can get behind the oceans of abuse and whitewash. The centre spot in the lower panels is a favourite form, and is met with all over Turkish work. In the narrow winding streets one sees Turkish wooden houses with latticed windows, usually with a good projecting cornice and pilasters, and the upper story projected two or three feet and supported on wood brackets. In the high walls giving access to the forecourts of the stone houses one sees here and there a Renaissance door and window, with occasionally a wall fountain, a trough surmounted by a round-arched niche and accessories being the usual motive. None of these call for any particular remark. The wood houses are pretty much the same as those in the streets of Stamboul, and remind one a little of English half-timbered work, gables of course being absent, and a thin, matchboardy effect taking the place of the solid oak of the English. I have reserved the mention of the earliest work of all, the Byzantine, till the last; but there is really no definite building in that style that I am aware of existing in Candia. Pashley mentions nothing in his book, and the only thing which Spratt mentions which I have not identified is (I quote his own words) 'the ruined church of St. Titus, over the eastern part of the fortifications; for such a town, of cathedral proportions and architecture. A handsome entrance and circular window over, and part of an elegant baptistry attached to it, are still standing.' It may have been an oversight on my part, but I certainly know nothing of such a church, which may, of course, have been destroyed since Spratt's time (1865). The church also may not have been Byzantine. This takes us pretty well over the ground for Candia. In general impression it is a hopeless mixture of the odds and ends of various periods. There is not a recent building of any note whatever, except perhaps the Greek cathedral, and not a single mosque which is worth enlarging on. The best mosque in the town is the plain old building mentioned before as the only Gothic church existing; but here, beyond a picturesque, weather-beaten, brick-and-stucco wall, there is

nothing to be noted. The modern Greek cathedral (shown in the sketch in combination with the minaret of the new mosque) is best seen at a distance, and gives additional life to the sea-view of the town. One can pretty well take in the town after a walk through, and appreciate what it is—tawdry, neglected, mediæval Eastern—shortly to become more important, perhaps, through a museum which consists of valuable exhibits with no proper building to hold them; which is part of the fact that many people have ideas about reform in Crete, but as yet very little money or unanimity of opinion have been forthcoming to carry them out.

But, leaving Candia and the burden of Crete meanwhile, let us turn our attention to other parts of the island, and see what is to be found in the way of architecture. And if the result is disappointing, we can remember that archæologically, at least, the ancient evidences are of immense value. The results of Knossos, Praesos, Gortyna, Ghoulas, &c., and the sundry caves of Zeus are giving Crete a research interest quite exceeding expectations. Architecturally, however, it has no town with a strong mediæval interest, like Rhodes, and no body of work such as is disclosed to us in M. Enlart's new book on Cyprus. The results for Crete are in comparison meagre and fragmentary; here and there a small Byzantine church or a picturesque monastery, and for the rest, merely the plain domestic work met with in the country districts of any Eastern land. It is true that there are two other towns of importance on the north coast—Canea and Retimo — Canea being really the modern capital of the island; and I have not examined these towns as I have Candia, but anything really important would naturally be found at the latter place. The growth of Canea is due to the adjacent harbour of Suda, by far the best in Crete, and its prestige is only on the modern side. It is the residential town of the High Commissioner, and, like Retimo, a commercial centre. It would be necessary, therefore, to thoroughly explore the country districts to arrive at a complete knowledge of all the smaller Cretan work. As the architectural bits are so fragmentary, and native evidence so little to be depended on, this would mean a tour of several months' duration. The Italians are said to be working up the architecture of Crete now, but I am not certain how thoroughly for the country districts. I was only able to make a tour of about 100 miles through fairly representative country, but was thus able to appreciate pretty well what can be looked for from the island. I could not do better, I daresay, than illustrate by examples the Cretan house, church, and monastery.

The houses of the Turkish beys are the only ones left to us of any importance. They are usually farm-steadings in themselves, but the houses of retainers are sometimes grouped in a tiny village near. I can briefly illustrate the better class of house by the one I have most acquaintance with—the headquarters of the excavation at Knossos—of which I have a sketch (see lithograph). The front entrance is quite a private one, and leads to the little piazza reserved for the household. The real entrance is at the back, through a courtyard, and leading out of this yard, round which are grouped the stables, is a smaller one descending to the kitchen apartments and entrance to the harem. The *sclamlik* looks out to the front, as do the other principal rooms. All have stone wall fountains, which cool the air in summer, and a divan, or at least a platform, round three sides. Glass is a luxury, but hinged wood shutters opening outwards are indispensable. In the house I am describing, there are loop-holes in the walls, presumably for defence. Joined on to the house, besides the little *piazza* in front, is a large water tank, forming a reservoir for the irrigation of the garden. This tank is not conducive to health in summer time. The house is all whitewashed externally, and is very sensibly plain, with a square parapet to the flat mud or cement roof. The rain water is carried off by channels running down the wall, which in the front of the house are screened by pilasters. The ceilings are of wood; stout exposed rafters carrying boarding. In the back entrance lobby is an olive press in the wall for the use of the household. As for the villages, the small out-of-the-way ones have the merest shanties, with rough stone whitewashed walls and flat mud roofs, huddled together in picturesque style. The hill-villages in summer are pleasant, as one-half lives on the roof. The larger villages have whitewashed houses, the more important ones with courtyards opening off the streets, and sometimes of two stories, as in Candia. Red tiled gabled roofs are also occasionally met with, though they are really modern features.

The next thing to consider is the Byzantine church. This is often in splendid isolation, sometimes on a hill-top, and occasionally even on mountain summits. But every village has its εκκλησια; at feasts, such as Easter, a very important place indeed. The universal plan is an oblong hall, without a narthex, and with but one feature—the tiny apsidal projection at the east end, finishing semi-dome fashion. In this apse is the only fancy window; in common cases, usually a queer little two-light, with the luxury of a hood-mould. The better class of church has a carved door, or painting in the plastered vault. Notes from the two churches beside the ancient site of Lyttos will illustrate. The rough plan and section of the church of St. George illustrates an average arrangement (fig. 3). There are traces of rude painting in the vault of this church. A very common type of door-head is shown. The wood doors of these churches are sometimes elaborately carved. The usual type is a two-leaved square door, with a rounded centre-post, on which most of the carving is lavished. Many of these wood carvings are so undoubtedly executed in the full tradition of good work, that it is astonishing to find they mostly belong to this century; in some cases being done within the last thirty years. So tradition is dying hard in Crete. It is quite possible that these churches at Lyttos, not specially celebrated in the island, may point to some fairly interesting tit-bits of Byzantine work, with, perhaps, one or two new developments of plan in other parts of the island. But there are no outstanding churches of any size, and I doubt if results would go beyond the student's note-book. I have the names of three or four other churches in the island which are said to be interesting.

Following naturally from this, of course, is the subject of the monasteries, as they always have chapels attached. The situation of monasteries here, as elsewhere in the Levant, is often very delightful. One rides up a ringing stony pathway to a sense of summit and retirement, and a clean spacious comfort which is a relief to the wayfarer after the squalid village. They are usually more subjects for the sketcher than the architect in his more practical moods, but the monastery at

Fig. 4.—Monastery at Arkadhi. (Traced from a Photograph by Mr. F. B. Welch.)

Arkadhi (fig. 4) shows a front of considerable interest, with that quaintness of combined Gothic-Classic influence so instructive often in unhackneyed forms. In this way it appears to be even more interesting than the armoury at Candia, though I regret that I have not been able to verify the detail from actual observation.

Unfortunately, I have reason to believe that this is one of the only things of its kind in Crete. The country is not rich in monastery work. Pashley mentions a monastery at Triadha, and gives rough sketch, which appears picturesque enough. The pen-sketch of a deserted monastery on Mount Iuktas shows how the average of these buildings tell by their grouping, but have no particular architectural qualities, strictly speaking.

The second part of this paper, dealing with some Turkish work at Broussa, follows somewhat naturally from the first; as after an examination of the mosques at Constantinople, one feels, as in Crete, the readiness of the Turk to adopt the indigenous architectural forms in the territories of his conquests. The work of the Osmanlis at Broussa, however, is earlier and more representative than any found at Constantinople, and holds an isolated position in Turkish art, somewhat similar to the *Cinque-Cento* in the history of the Italian Renaissance. The intricacy in the developments of Eastern work is manifold, but in the vast web of Saracenic styles the growth of what might be called the Renaissance of Turkish architecture is at least clear and distinct. The beginnings are to be found in Asia Minor, in those large and suggestive and often very beautiful remains of the Seljouk domination. It may be said that this pointed work of the Seljouks bear most affinity to Persian work, on which, as far as I know, it was directly founded. The work about which I wish to speak begins with the era of the Broussa Sultans, when Mourad, Bayezid, and Mohammed—all first of the name—built the chief mosques of Broussa. Founded, as it was, on what the Seljouks had done before, this work seems to have, in addition, some large and common-sense individualities. The typical two-dome plan, which Texier observes is not found at Constantinople at all, is best seen here in the Mosque of Mourad II., the Mosque of Bayezid I., and the Green Mosque, or Mosque of Mohammed I. It is of this last, and of its *Turbeh* adjoining, that I wish specially to speak (see lithograph).

The two-dome plan, in its completeness, has an open porch, or loggia, of the whole width of the entrance front; and this feature can be seen in the Bayezid and Mourad Mosques. The Green Mosque, however, was left incomplete, and the porch was never added. It would be interesting to know whether the great canopy of the entral doorway (see lithograph) belongs to the original period, or was added later. The mosque was built in 1420, and one hardly looks for such big, say *Michelangelesque*, detail in Anatolia at that time. In exterior disposition the mosque is, uniformly, of two stories, finished with a cope, over which is a low-pitched roof. At the entrance end are two minarets, originally covered with green *faïence*, and evidently reconstructed since the earthquake of 1855. The exterior, generally, is all marble surface, and has exquisite carving at the doorway, windows, and niches. The doorway is a particularly fine piece of design, both in proportion and detail. The plan (fig. 5), in essentials, I can answer for as being reasonably correct, though there is no scale. As yet, I have seen no publication of the plan of this mosque. Recollect, in this connexion, the caution that is necessary in Turkey when taking notes on a casual visit, and do not judge hardly of these meagre sketches. The thought displayed in this building is its essential quality, and this one may realise without elaborate means. The adjoining *Turbeh*, or tomb of the founder (see lithograph), is one of the most delicious creations imaginable. The lower part of the exterior is of white stone, with large panels of bright blue-green tiles. The upper part is painted light green, and it is finished with a domical lead roof. It is of large scale, as can be seen from the figures in the photo of the entrance. The sketches exhibited were from memory, and, as in the case of the mosque, have no scale. The following notes concerning both these buildings were taken on the spot. Beginning with the *Turbeh* first. 'Outside, the mouldings are large and simple, and the size allows for great breadth of scale. There are ornamented tiles over some of the lower windows, and panels of same above these. The doorway is a fine piece of colour, painted, not tiled, and over the doorway is a good, simple, stone-moulded hood. The plan of the building is an octagon, with a range of large lower windows occupying six sides, the *mihrab* and door, opposite each other, being in the other two. There are two ranges of upper smaller windows, the highest being just below the springing of the dome, in that deep band of slightly projecting corbelling, triangled out, which occurs so often in Turkish domes. These top windows are stained glass, the others plain; but the light coming from the lower ones is subdued, as the wall is very thick, and the straight ingoings catch a lot of light. The interior defies description. A rich blue-green dado of hexagonal tiles, with a

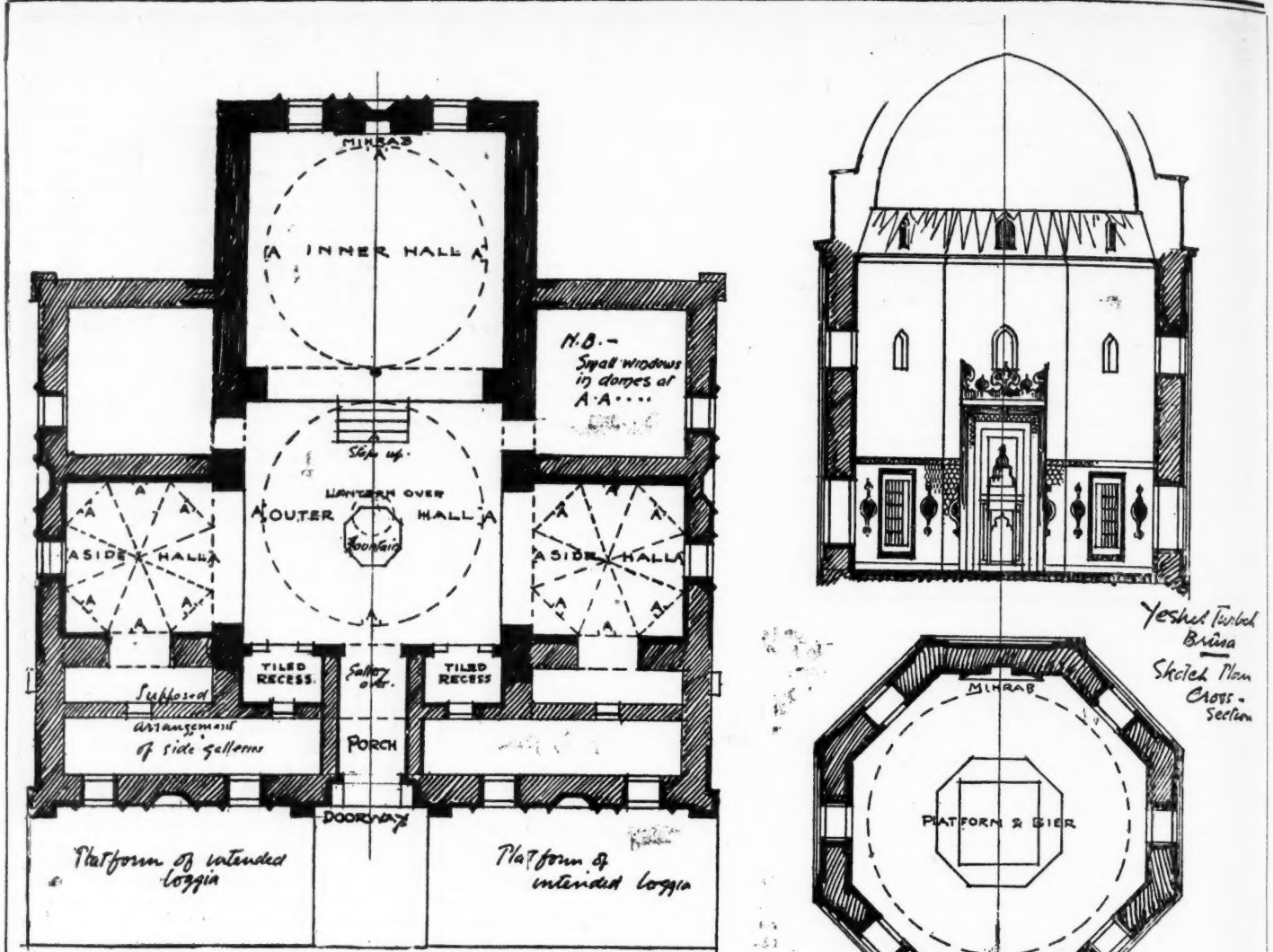


Fig. 5.—Plans and Section of Green Mosque and Turbeh, Broussa.

border at the floor and ditto at top, runs right round to a height of about 10 ft. It stops against the doorway and *mihrab*, and the windows are set in it with independent borders. At the sides of each window, about midway up the dado, is an ornamental spot of tiling. At the broader *mihrab* and door there is only room for half of this (see sketches). All is white plaster above the dado, except for a little centre flower painting in the dome, not of much account. The stone floor has an octagonal centrepiece, raised one step, and ornamented with tiles on the edge. Above this, again, is a square tiled platform, about 18 in. high, for the bier. This platform has a vertical design of tiles of great beauty and exceeding richness of colour—a perfect harmony of blues. The *mihrab* has some exquisite work; in fact, it is full of the most delightful detail in form and colour. The small round pillars, covered with *faience*, and the centrepiece over the pointed niche-head, are specially noticeable. In the latter one notices the delicacy and beauty of the contrasts between the main ground colours: pale mauve competes with a light blue-green, helped by a judicious balance of white and green-yellow. There is an immense amount of study in the floral patterns. The lighting is perfect.'

Leaving the *Turbeh*, we come to the mosque. 'Outside, certain windows have a thin blue strip of tiles, 2 or 3 in. wide, inside the architrave. This has a good effect in combination with the white marble. The interior, considering its size, for bigness and beauty and rest, impressed me more than almost any I know. It is on the two-dome system, and quite successful, owing to some simple expedients. (1) The entrance-domed hall has two side-spaces opening off it, roofed with hexagonal domes, and with floors raised above centre level, which gives the entrance a breathing room that is particularly valuable. (2) The floor of the inner domed hall is raised some 2 ft. 6 in. clear drop above the other, with a small centre stepway only. (3) There is a *flat* marble arch between the domes, which is good, as it does not exclude too much light, or separate the domes too much. (4) There is a small octagonal fountain under the outer dome, which helps it to be more obviously an entrance to a higher shrine. (5) There is a circular top light over this dome, so that the inner dome, being darker, has more of an air of mystery. All the richness of tile decoration (and this part is quite as fine as the *Turbeh*) is concentrated on the doorway, side recesses and upper gallery, so that the entrance end is bright and cheerful, yet with an air of quietness about the side niches of the door; the inner part is plain, sombre, and tomb-like. Yet with all the accessories the two are so perfectly joined together that there can be no question as to their being one building. Standing in front of the dais, looking back to the door, one notices the fine effect of the subdued light in the rich tile work there, all in a beautiful scheme of blue. There is a dado in this building as in the *Turbeh*, but not so fine; the colour is a plain dark green. There is nothing particular about the *mihrab* and *minber*.'

The lighting arrangements of this mosque are most instructive for study: there are three small windows in each of the main domes, at the springing; and the side domes have each six similar windows. The other windows, shown on the plan, give a subdued light, as in the *Turbeh*. The gallery on each side of and above the entrance is a most interesting feature. It is shown, to some extent, in the photo, but its plan is by no means clear to me. Undoubtedly it bears some resemblance to the similar feature in the Mosque of Mourad II., of which Texier has a plan.

Other most interesting mosques in Broussa, besides those already mentioned, are the *Ulu Jami*, or Great Mosque, the Mosque of *Emir Sultan*, and the Mosque of Mourad I. at *Tchekirgeh*. The former is a very large building, more like a bazaar than a mosque, and quite dominates the general view of the town. It is of large simple-pointed work, with two tall minarets and a forest of domes. It is finished in stucco, like most of the Constantinople mosques, and his poverty of material contrasts rather unfavourably with the Green Mosque, which is finished with marble both outside and in. Some very good brickwork is also to be seen at Broussa—in the exterior of the Mosque of Emir Sultan, and in the various Turbehs at the Mosque of Mourad II. The type of entrance loggia which was so common here, and which was continued as a feature in the Constantinople mosques, may be well seen from the Mosque of Bayreid I.

In considering the conditions of the problems presented to us by these Turkish buildings, we can learn by seeing the use the builders of them made of their materials to hand *in toto*: that is to say, of conditions of climate and religion, as well as hard, matter-of-fact forces of everyday design; and following from this, by the good old lesson on the justification of apparent eccentricities, common in some form or other to every period of architecture. What strikes as boldness in a design, when we come to analyse its constructive meaning, may appear simplicity itself when the effect as it stands is only taken into account, and unworthy of any except admiring notice. For example, stripped of its effects and considered on plan, the corbelling out of the main domes of the Green Mosque on three sides only may appear freakish, but in reality it serves to make one interior of the two domes, especially as softened by the beautiful form of corbelling adopted by the Turks and all Saracen races. The fact, too, in the same building of a higher shrine inferior in cheerfulness to the lower entrance part seems peculiar on the face of it, apart even from any religious motive; but when we see that this effect is balanced by a stately gravity in the design of the entrance wall, and, moreover, is quite reasonable in itself from an æsthetic point of view, we realise a something here which gives a sense of fresh perception, and, as such, is, of course, of the

highest value. The sense of strangeness in contemplating Eastern buildings at the first rush is inevitable to us, because the real East is far removed from the West in everything, including such a small thing as the treatment of an interior. The elements of the composition in a mosque interior are the fountain of cold water surrounded by cool and restful colours, and an exquisite diffused light. In the best mosques there is no attempt at strenuousness in anything. The mihrabs, though often marvels of detail, are set as a rich door in a plain wall would be, which means that they draw attention to themselves, but do not detract from the simplicity of the composition as a whole. Naturally, in Eastern countries the smallness of the entire window area necessary for lighting a building adequately, vastly affects the conditions of design. It is this partly, perhaps, that makes the domical construction of these countries so easy, as there is no need to be eternally fussing about this or that window which interferes with this or that construction. The total effect of lighting in two interiors (one Western and the other Eastern) may be the same; the former with its many windows, and the latter with its few. The advantage, however, for purposes of decoration is distinctly with the East; the wall-spaces are broader and simpler, and the absence of an appearance of lighting forcing itself on one gives greater restfulness to the decorative effects. Thus in a measure the entire question of Eastern decoration must be considered with reference to itself alone. The large use of tiles in decoration is the prevailing characteristic of Persian art and what emanated from it. This makes possible the large spaces of plain colour which are necessary when only borders and spots of pure ornament are used. Hexagonal tiles of an exquisite blue-green, relieved by gem-like touches of pure colour, such as we see in the Green *Turbeh*, are, under the circumstances, perfectly satisfying. It is a question of surroundings and mental attitude to a large extent. Coming from the blinding sun and dusty glare of an Eastern summer into such a perfectly neutral half light, with its cool marbles and fountains, and its atmosphere of satisfying colour, one feels a sense of the fitness of things. Use and wont and perception of long ago have made the materials which best suit the situation. The practical conclusion of the whole matter is to try and find out how the Moslem has solved the ordinary problems of his building, for naturally he has a certain discount to start with, having Persian tiles, which belong to the world's chiefest treasures of art, at his command. But if there are evidences of thought in their setting—as, I think, will easily be found in such buildings as the Green Mosque at Broussa—we can have scope, after the first burst of admiration, to contemplate wise solutions of problems which come very near to us after all. There is a strange freedom also in the treatment of much of the Turkish work which makes it easy to institute a comparison with modern work. For instance, Mr. Philip Webb's conception of stone detailing seems to me similar to the attitude of the Broussa builders in a like capacity. A strong feeling for material is evident, and a daring reserve in design which is nearly always justified in effect."

After the paper, Mr. Fyfe showed a number of lantern slides illustrating the newly-excavated palace at Knossos, Crete, and gave a brief description of numerous drawings of the same which were hanging on the walls, including architectural plans, details, and large photos, and a large selection of the original drawings of the painted stucco work which was found. The slides and drawings were kindly lent for the occasion by Mr. Arthur J. Evans, Keeper of the Ashmolean Museum at Oxford, who was present at the meeting, and who referred in detail to an architectural representation on a small scale which had been found in fragments of coloured stucco; but without the illustration of this it would be useless to report his remarks.

Mr. Phené Spiers said that the whole subject was absolutely new to all of them, and it was impossible for anyone who had not been over the ground of the discoveries in Crete to say much. He was struck by one remark which Mr. Fyfe made in the first part of his discourse, *i.e.*, where he noticed how strange it was that in those early towns the people built in materials of the most lasting nature, and also carried out works built in the poorest material; but that which was strangest of all was that evidence should now be found of crude or unburnt brickwork. One would suppose that a wall built of crude brick which, here in England, a week's rain would destroy could not have stood through so many centuries; but in some of the photographs they had seen there was distinct evidence of some material, probably the crude brick he had referred to, above the walls of stone. Sometimes the walls were built of rubble masonry with clay mortar, and that was the description of a wall found by Schliemann at Tiryns. Of course, there were other instances of crude brick walls lasting through many centuries, but they were in countries where the intense dryness of the atmosphere made destruction almost an impossibility. Professor Petrie found at Dendereh, in Egypt, an arched vault with three rings of voussoirs of unburnt brick, dating from 3,500 years B.C. It must be borne in mind that these ancient bricks were very different from those which people might think of. They were dried in the Egyptian sun, and their hardness was so great, that it was very difficult to scratch them with one's nail; they acquired a hardness of which people in this country had no conception. Vitruvius mentioned the very great care which had to be taken in preparing these crude bricks, remarking that they must be exposed for at least two years in the sun, and that care must be taken that at first they were not exposed too much to the heat of the sun, or otherwise they would crack and would not last. It was interesting, therefore, to notice in some of the illustrations they had seen the remains of crude brick on the top of the broad and well-built stone walls. The same construction was employed in the temple of Hera at Olympia—at least, that was Dr. Dörpfeld's conclusion. The paintings they had seen that evening were very interesting, because they were so natural. Work of a similar kind had been found in Egypt. A certain king gave up the religion of the country, and in changing it had adopted a system of decoration which, as in the case of the pavement of Tel-el-Amarna, one might think the work of the Japanese of the present century. We wanted to know a good deal more about the architecture of the Seljouks. He desired to propose a hearty vote of thanks to Mr. Fyfe for his lecture. They could congratulate themselves that Mr. Fyfe was going out again to Crete, and no doubt at some future time he would communicate to them something more on the subject.

Mr. A. C. Dickie, in seconding the vote of thanks, said that the paper was very interesting, especially that part relating to the plan of the palace at Knossos. That plan was rather confused, and it was almost impossible to come to a conclusion in regard to it unless one had been over the ground. The suggestion he had made in regard to it was suggested by a mosaic of the sixth century he had seen, where the columns were shown in exactly the same manner as in the illustration shown that evening—in the manner of primitive people who combined elevation and plan in their drawings. It seemed difficult to find anyone who could appreciate Turkish architecture unless it was seen on the spot. Seeing Saracenic architecture in drawings was not the way to judge it, and unless seen in its native soil it was difficult to appreciate its beauties. There was much in Turkish buildings that violated what were considered to be the canons of design, that one often forgot the frequent harmony of the whole.

Professor Beresford Pite said he was sure they would all wish to include Mr. Evans in the vote of thanks for the honour he had done them by attending the meeting, and by lending the photographs that had been shown that evening. As to the newly-discovered and now world-famous frescoes from Knossos, one could speak on the subject without much knowledge, but they suggested to him something which he had not fully realised before. If they reviewed the whole growth of Greek art as they knew it from the period indicated in the colour work in the Cretan palace to the period indicated by a Roman city like Pompeii, he did not think they could lose sight of the fact that Greek architecture which lay between these two extremes was coloured in the same key and with the same richness, and it was interesting and suggestive that the same colour schemes had been found in earth-bound and ash-bound cities separated by such a long period of time. In some of the fresco work which they saw that evening there was an extraordinary naturalistic expression. The figures were very life-like, and were distinct from the ordinary Egyptian form, to say nothing of the perfect freedom and beauty of drawing. He was glad Mr. Fyfe had not been to Egypt, because had he done so they would not have had his careful description of some commonplace but interesting Turkish buildings. That, of course, raised another question, viz., had the Turks any art at all—any building materials which they did not borrow, and any forms which they did not degrade? In fact, was not the whole of Turkish art a degradation of what had preceded it?

Mr. Walter Crane supported the vote of thanks to Mr. Fyfe for his paper and to Mr. Evans for his help on the occasion. He had been attracted principally on account of the frescoes which, as seen from his position, reminded him of a sort of blend of Egyptian and Etruscan work. Closer examination revealed resemblances (in treatment of drapery and extremities) to the work of early Greek vase painters. He did not know about their being naturalistic (except the modelled and coloured bull's head, which had great vivacity), for that was a comparative term, and as they were treated on one plane they could scarcely be said to be naturalistic. He would like to know more about the colours—whether, for instance, they were the ordinary earth colours, or colours of which we did not know. As to the scheme, frequent use of turquoise blue and deep red reminded one of Pompeii and Egypt.

Mr. A. T. Bolton said it would be a misfortune if Mr. Fyfe, who seemed to be inclined to take up the study of Turkish architecture, were to be discouraged by the idea that Turkish architecture was merely a degradation of what had gone before. Some of the later Turkish buildings possessed a value of their own, for in them the ideas of the Arab builders were carried on. One did not get the detail, but as far as the forms were concerned, in the ideas of the builders of some of these comparatively late and rather unprepossessing buildings there was a distinct value. The very late mosque on the citadel at Cairo, for instance, was interesting, for in that building could be seen a dome supported by four half domes. Some of the Turkish mosques in Constantinople, judging from drawings, he thought might be of interest and value; while some were very extraordinary; for instance, there was one where the domes were supported by immense octagonal pillars. He thought that if Mr. Fyfe examined some of those mosques he would realise that they afforded valuable information in the way of development. Somewhere about the Renaissance times some of these Oriental buildings were worked out by Italian architects who had gone abroad. Nearly all Turkish architecture was the work of foreigners, and he did not believe that the Turks, as a people, ever did any building at all; it was all the work of Greeks, Arabs, Italians, Frenchmen and others. In short, the Turk did not appear to have any building instinct at all; but, however unprepossessing their work might be, he did not think it should be neglected, and anyone who took up the subject would do a work of much value.

Professor Elsey Smith said, in regard to the frescoes, it would be interesting to compare them with a very small fragment which existed in the museum at Athens, and which was found close to the Erectheion in 1886. It was on a much smaller scale than the drawings they had seen that evening, but it represented the figure of a warrior with a shield, on which was a drawing of a satyr. In that case, also, the figure was in elevation, and the colour was perfectly flat; but the outline appeared to be drawn with a strong brown line with the colour filled in between. Was there any explanation of the great tank in the throne-room of the palace, or of the curious set of chambers running out of the long passage? It was a matter of great satisfaction that a member of the Association should have taken part in such work, which rivalled in interest anything since the days of Mycenæ. As to the other part of Mr. Fyfe's paper, it was an important contribution to the history of architecture in Crete. It was disappointing to find that the remains were so extremely slight of almost all periods.

The vote of thanks having been heartily agreed to, Mr. Arthur J. Evans said he could bear testimony to the very good work that Mr. Fyfe has done in connexion with the excavations which he (the speaker) undertook last year at Knossos. The results of the

excavations were very surprising. He had known the site for some years, and Schliemann had his eyes on it once. When he was especially studying the existence of early writing in Crete, it seemed very important to undertake the excavation of the site, where the remains of wall paintings, curious signs, &c., might refer to written characters. He secured a part of the site as early as 1895, but it was only last year that he obtained the remainder. Although he had great hopes of finding something during the excavation, he had been inclined to think that with such a site, occupying an elevated bit of ground in the immediate neighbourhood of a great city which had lasted through Greek and Roman times, and not far from another city—Candia, which was its immediate successor, and at one time a great fortress—it seemed quite hopeless that there should be much of interest left under the surface; but the result of a few weeks' digging was to reveal the astonishing fact that the site had practically never been touched since the days when the Mycenean Palace was destroyed. He supposed that last season they excavated about two acres of the site, and over the whole extent there was hardly a bit of pottery later than the Mycenean period. Another curious fact was that very often a foot or so below ground began the remains of intact walls, with frescoes on them, as intact as when left by the workmen. It was very astonishing to dig down a few inches below the surface and find these walls—to find a carved throne unharmed; beautiful alabaster vases laid on the floor just as they were left. In fact, if one took the arrangement of the throne-room—the benches, the throne itself, the pavement with the traces of painted cement, and the very beautiful stone tank, one might imagine oneself in the room of a Pompeian house, though the palace at Knossos was fourteen centuries older than Pompeii. As he had said, there was nothing later found than of the Mycenean period, and what pottery had been found fitted in generally with that found in the tombs of Mycenæ, and also with fragments found in Egypt under circumstances which enabled one to date them absolutely to the time of the Pharaohs of the eighteenth dynasty. There was a great deal of resemblance, too, between the fragments found and those found by Professor Petrie at Tel-el-amarna. In addition to that, there was evidently a very intimate contact with Egypt, as was seen in the Egyptian forms of griffins and sphinxes. Even in the procession there were certain Egyptian elements which curiously recalled some of the processions on the tombs of the times of Thothmes III. at the beginning of the fifteenth century B.C., in which the people called Kefts, the islanders of the sea (who evidently were the representatives of the Mycenean civilisation), were depicted. People were bearing vases precisely similar to those found in the palace at Knossos. But the most important discovery of all was the establishment of the fact that these people possessed a highly elaborate system of writing. Some of the paintings went back to the period of fully developed Mycenean art, viz., about the fourteenth century B.C., but beyond that there was evidence of a still earlier stage. As to the different dates of the walls, there could be no reasonable doubt that the walls to a certain extent represented certain dates, but on the whole there was a great deal of unity about the main walls of the palace. The walls went off at right angles; there was the great gallery running along the main access, but here and there were slight deflections from the original direction; and in many cases fragments of the early wall were built into the later. Some of the curious symbols, cut on gypsum blocks, were religious; the double axe, for instance, which appeared in conspicuous positions, and which occurred on nearly every block. There were also found on the floor level vases of a very beautiful ceramic style, and which showed them to be more or less continuous with the Mycenean period. There was one bit of fresco which unquestionably represented the same stage of art as those earlier pre-Mycenean vases. In addition to that, there was found a very interesting monument of a figure with an inscription on three sides, and about which Egyptologists seemed to be pretty well in accord, and the approximate date of which was 2,000 B.C., corresponding to the earlier period of the palace. As to the frescoes, there were one or two specimens of what might be called the minotaur style, representing ladies in extraordinary aspects—with narrow waists, and with their hair most elaborately curled and frizzed. One thing was clear, and that was that Crete was the centre of a very high civilisation. Perhaps in the earlier time it had few foreign relations, but by the time of the great Mycenean days, it was becoming more or less cosmopolitan; it took ideas from Egypt and Assyria, and in the main was independent. Some of the monuments were very naturalistic in style, and, so far as the animal representations were concerned or in the portrayal of nature, they were never rivalled in any period of classical Greece.

Mr. Fyfe also replied. As to the way the frescoes were treated, the red was very permanent and would stand scrubbing, but the blue was rather perishable and came off somewhat easily. As to Turkish architecture, he thought that later examples had a good deal of Renaissence influence in them. He agreed with Mr. Bolton in thinking that later Turkish work might be usefully studied now. Of course Cyprus was more interesting than Crete, and it could not be expected that Crete would produce anything like the beautiful mediæval work of Cyprus.

The meeting then terminated.

The next meeting will be held on Friday the 15th inst., when Mr. E. S. Prior will read a paper entitled "Gothic Architecture, and the basis of its Beauty."

Illustrations.

CHOIR STALLS, AND VIEW IN CHOIR, LINCOLN.

THESE drawings from Lincoln Cathedral, as well as that of the entrance to the Galilee Porch at Ely, form a portion of the excellent work done in connexion with the Pugin studentship of the R.I.B.A. by Mr. Jas. McLachlan, of Edinburgh, who gained the Studentship last year.

The stalls form a fine example of Gothic woodwork of the Decorated period. Of so well-known an interior as the choir of Lincoln it is unnecessary to say anything here. Mr. McLachlan's charming sketch shows it from a point of view different from that most usually taken, looking back westward from the eastern portion of the choir. In the distance, between two of the piers, are seen the stalls shown in the larger drawing.

GALILEE PORCH, ELY.

THIS drawing shows the entrance to and interior of the Galilee Porch added to the Transitional front of Ely in the Early English period, obviously in the first instance for a structural reason, viz., to afford a western abutment to the arches of the tower, which had probably shown some signs of requiring such support. This piece of "engineering" was turned into an exquisite piece of architecture, more satisfactorily to be viewed in the interior than on the exterior, where it can be seen in connexion with the older work of the front, with which it does not harmonise; while the interior is complete in itself.

ANCIENT REMAINS IN CRETE.

THESE should more distinctly be defined as Venetian remains in Crete, with one exception, the view of the Turkish arches in Candia. They form a part of the illustrations to Mr. Fyfe's paper at the Architectural Association on "Architecture in Crete and Turkey." The two sketches at the top are by Mr. Fyfe; the other illustrations are from photographs taken by Mr. Welch.

TURKISH BUILDINGS AT BROUSSA.

THESE are also in illustration to Mr. Fyfe's paper above referred to, and represent three portions of the "Green Mosque" at Broussa, and the "Green Turbeh." They are described in Mr. Fyfe's paper on another page, in connexion with which will be found also a sketch plan and section.

NEW CHURCH, KIRKCALDY.—Dunnikier United Free Church, Kirkcaldy, was opened on the 31st ult. Designed by Mr. John B. Wilson, Glasgow, the church is fitted for electric light, but is in the meantime lighted temporarily with gas. It is seated for 740, and has a hall for 260 attached, with session-room, vestry, cloakroom, &c.

THE SURVEYORS' INSTITUTION:

FUTURE OF THE LONDON WATER SUPPLY.

A MEETING of the Surveyors' Institution was held on Monday evening at No. 12, Great George-street, Westminster, Mr. J. Shaw, the President, in the chair.

The secretary, Mr. Julian C. Rogers, read the following address to be presented to his Majesty the King, which had been adopted by the Council:—

"We the president, council, and members of the Surveyors' Institution, in general meeting assembled, respectfully approach your Majesty with an expression of heartfelt grief at the great calamity which has befallen the whole Empire in the death of our beloved Sovereign, Queen Victoria, and our gratitude for the blessings which the nation has enjoyed for the many years of her long reign under the influence of her Majesty's exalted character and noble example. While thus expressing to your Majesty and the Royal Family our respectful sympathy, we desire to offer our sincere congratulations on your Majesty's accession to the Throne of the Empire and an assurance of our loyalty and devotion."

The President moved the adoption of the address by the meeting. The motion was carried, the members standing.

It was announced that the address would be inscribed upon vellum.

The meeting then resumed the discussion on Mr. R. E. Middleton's paper on "The Future of the London Water Supply," which has occupied the attention of the two previous meetings.*

Mr. E. K. Barstall, in a letter which was read by the secretary, stated that at the beginning of 1892 the eight London companies supplied approximately about 31 gallons of water per head of the population. Constant supply was afforded as follows:—Chelsea, November, 1891, 23 per cent.; November, 1900, 100 per cent. East London, 98 per cent. in November, 1891, and 99 per cent. in November, 1900. Grand Junction, 75 per cent. in November, 1891, and 100 per cent. in November, 1900. Kent, 56 per cent. in November, 1891, and 93 per cent. in November, 1900. Lambeth, 53 per cent. in November, 1891, and 76 per cent. in November, 1900. New River, 44 per cent. in November, 1891, and 95 in November, 1900. Southwark and Vauxhall, 77 per cent. in November, 1891, and 93 in November, 1900; and West Middlesex, 43 per cent. in November, 1891, and 98 per cent. in November, 1900. The great increase in the percentage of constant supply was a point upon which the companies were to be congratulated. At the present moment the supply was afforded to about 6,200,000 persons at the rate of nearly thirty-three gallons per head per day. If the population in the said area had increased as was anticipated, according to Mr. Middleton's figures, the number would have been 6¾ millions. It was therefore apparent that the population was not increasing at the rate that was anticipated. There could be no doubt but that a domestic supply of seventeen gallons and a trade and public supply of eight gallons was ample for London or any well-managed undertaking (unless the trade supply was abnormal), or a total of twenty-five gallons per head daily. It was apparent that a loss of over eight gallons per head daily was taking place, or approximately 50 million gallons a day, or a supply for an additional two million persons, or 30 per cent. more than the number at present supplied, as pointed out by himself and partner, Mr. Stevenson, in a pamphlet on the Metropolitan Water Supply published in 1892. These 50 million gallons daily led to an expenditure for collecting, pumping, and filtration of nearly 50,000*l.* annually, and the expense of nearly 10,000*l.* yearly in the additional quantity of sewerage which had to be dealt with by the London County Council at their pumping stations. In comparing the month of November, 1891, with the same month in 1900, it is found that only one company—the East London—had improved its position in the matter of checking waste. The other companies had all gone on the backward path, thus:—Chelsea, 1891, 33·87; 1900, 45·25; Grand Junction, 35·49, 45·29; Kent, 27·24, 30·21; Lambeth, 27·46, 33·29; New River, 26·85, 30·25; Southwark and Vauxhall, 29·97, 36·19; and West Middlesex, 29·08, 32·63. The notice recently published in the papers intimating that the Metropolitan Water Companies were intending to propose fresh

* See our issues for December 15 and 22 and January 19.

regulations under the powers of their Acts of 1852, 1871, and 1897, was apparently an earnest of their intentions to bring the regulations of the water companies in London into harmony, and it was to be hoped more in unison with those prevailing in well-managed undertakings in provincial towns such as Portsmouth, Nottingham, Norwich, Bury, Derby, &c. Unless regulations similar to these were adopted in lieu of the emasculated regulations usually finding favour with the Local Government Board, they would be of little more use than those existing at the present time.

Mr. Hunter stated that he was connected with Mr. Middleton in carrying out the new waterworks at Staines, and he could congratulate him upon his paper ; it was written in that scientific spirit which appealed to the judgment of them all. He agreed with him in his conclusions generally, and the deductions by which he had arrived at them. It appeared to him that Mr. Middleton had brought forward many cogent reasons with regard to wells, and it was quite possible that they could derive from wells a much larger supply than they at present availed themselves of. He proposed to confine his attention to the question of the development of the Thames and the means of storage. The matter divided itself into four divisions. First, what was likely to be the requirements of London in the future? Secondly, was the quality of the present supply good? Thirdly, was the available quantity sufficient for many years to come? And then, if Nos. 2 and 3 be answered in the affirmative, there remained this question—which was the cheaper method of supply, and therefore the more advantageous, to London? With regard to the future requirements of London it was very difficult to arrive at reliable figures so far as population was concerned. Generally, he agreed with Mr. Middleton, his figures being fairly in agreement with those accepted by the Balfour Commission, who considered the question up to 1931, by which time they anticipated that if London were to increase in the same proportion as between 1881 and 1891 it might reach a population of about 11¼ millions. They took as the rate of supply about 35 gallons per head per day, and that seemed to him to be ample, because, for instance, in Norwich it was 17, Manchester about 32, Liverpool about 28, and Sheffield about 26. He was glad to find that they would have the support of Mr. Whittaker in their endeavours to check waste. The water companies had that day appeared before a tribunal appointed by the Local Government Board with the view of obtaining reasonable regulations which would assist them in guarding against waste. Waste was of no use to anybody, but was detrimental to the interests of the large body of consumers. He hoped that in this matter the companies would have the support of the Institution. The fact had been arrived at that in 1961 there would be required a supply of 717 million gallons, and that 400 million gallons would be taken from the Thames. He proposed on this occasion to confine his remarks to the consideration of the 400 million gallons which had been shown in the Balfour Commission might be required in forty years from the present time. With regard to the question of quality, several gentlemen—Mr. Lovegrove, for instance—had a doubt as to whether the Thames should be used, and Mr. Whittaker said that the river must be adequately safeguarded, but doubted whether that could be done. Mr. Vernon Harcourt had similar doubts, but if they turned to the reports of the responsible bodies during the last few years they would see that the quality of the water was absolutely secured. Since the date of the Balfour Commission the Thames Conservators had obtained their Act of 1894, and they have used it with great effect. Anybody who had observed the river must have seen that it was in a very much better condition than before that date. Mr. Groves, of the Thames Conservancy, stated before Lord Landaff's Commission that the water contained only one-third of the impurities it did some eight or nine years ago, and Sir Edward Franklin, in a report dated January 31, 1898, bore testimony to the improvement of the quality of the water, and he had had more experience as analyst to the Local Government Board perhaps than any other man in the country. A great proof of the goodness of the London water was given by the vital statistics of the Metropolis. Apart from the reports of chemists, they could not get over the importance of the death-rate. There never could be such a low death-rate as 18 per thousand if there was an impure or imperfect water supply. He could state with the greatest possible confidence that the water as supplied by the companies of London was of excellent quality. Another point was the quantity obtainable. As they were aware, it was proved by Mr. Moore, the engineer to the Thames Conservancy, in his evidence before the Balfour Commission, that the average flow of the Thames was 1,350 millions daily. The minimum which the Thames Conservancy required was 200 million gallons, so that there was a balance of 1,150 million gallons available for water supply if only reservoirs of sufficient capacity be made to store water. Of course, in time the cost of storage became greater than the cost of obtaining a sufficient supply from an outside source. The supporters of the Welsh scheme at first proposed doing away with the supply from the Thames and the Lea, and anticipated obtaining 415 million gallons from Wales daily at a cost of 38,000,000*l.* They then proposed the Welsh supply as a supplemental scheme, and he did not wonder at their change of front, because in time the Welsh supply would be exhausted, and it would be necessary to revert to the present source, which the supporters of the Welsh scheme now affected to despise. The true solution was to develop our present supply until the cost of that was greater than that of obtaining water from Wales or some other outside source. In estimating the cost of these schemes he used as analogy the cost of the works at Liverpool, Birmingham, and Staines. The Welsh scheme for 121 million gallons daily would cost for works 20,600,000*l.*, and the Thames scheme for the same quantity would cost 5,340,000*l.* The interest during construction would be 3,190,000*l.* on the Welsh and 943,000*l.* on the Thames scheme ; and the capitalised pumping charges would be 87,000*l.* on the Welsh scheme and 2,773,000*l.* on the Thames. So that for 121 million gallons daily supply the cost of the Welsh scheme would be 23,878,000*l.*, and for the Thames scheme 9,057,000*l.* For a total quantity of 214 million gallons daily the total cost of the Welsh scheme would be 37,169,000*l.* and for the Thames 17,486,000*l.* Water companies were often attacked and called all sorts of names, but he ventured to think that no public bodies in the world had done more beneficent service for the health, comfort, and convenience of mankind.

Mr. Wheeler, K.C., stated that the discussion was of the highest moment. The whole of this agitation had been commenced, fermented, and brought about because at some unknown period of our future history the population of London might amount to no less than twenty millions. He, personally, did not follow such statistics to any great extent. He would like to point out the exaggeration with which this subject had been treated. Any one who knew the habits of the majority of Londoners was aware that a very small proportion had a morning bath.* He believed that in time this consumption of 35 gallons per head per day might be largely reduced. An enormous quantity of twice purified water was used for washing our streets, and an immense economy could be effected if the tidal water of the river was used. The whole matter was condensed into a few sentences of one of the speakers, who contended that there was nothing whatever to justify the burden and expense of going to Wales for water when it was close at hand. There was no evidence to prove that there was any immediate necessity of going to Wales. When the necessity arose, if it ever did, means would be found to deal with the matter.

Mr. Wilkins said the first difficulty they had to face was the prejudice which had been introduced. The question had become the sport of political party, and it was difficult to find a common basis for any branch of the subject. One would have thought that after the exhaustive inquiry which Lord Balfour of Burleigh made his report would have commanded the respect and adherence of most people ; but they found that no sooner was it published than it was attacked, and it was assumed that it was unworthy of credence and that it contained a lot of improbable statements which ought not to be accepted. The same thing had occurred with regard to Lord Landaff's Commission, and he was sure—having attended almost every meeting—that a more patient attention could not have been given to the various interests. They, however, it seemed to him, had one starting ground, viz., that the present supply was adequate for the present requirements, and that the quality was satisfactory. The problem they had to solve was not the present but the future supply, and that depended entirely upon speculation as to how London would grow. In considering the question they must bring in the four tests laid down by Mr. Hunter. There was no doubt that the quality of the water had improved, in spite of the increased population on the banks of the Thames, the Conservators having used their increased powers with a certain amount of vigour, tempered by a great amount of discretion. He did not think it would be wise to supplement Thames water, which during some months was spring water, by very soft water, as the inhabitants of London had become accustomed to their water and a change might result in illness. The colour of Welsh water could not be compared with that of the Thames ; and then, again, it would be brought to London through covered culverts which would prevent its being purified by sunlight and air. With regard to the proposed new regulations, the members of Lord Landaff's Commission were strong upon this point, having blamed the companies for not seeking further powers to prevent waste. It had been said that the water companies were bringing in these regulations in order to inflate their market value, but he would like to point out that the fittings were not the property of the company, but of the householders. There would, however, be a certain amount of saving to the companies. It seemed to him that Mr. Middleton had proved his case very well indeed—that the source nearest at hand should be utilised to the fullest extent before they embarked upon an unknown supply.

Mr. Basil Ellis said there was an idea in the minds of a great many people that if they only go to Wales for water there was practically an inexhaustible supply. Mr. Middleton had shown that this was not by any means the case, and he had also shown that the extension of the present system of supply was far cheaper than bringing water from Wales.

Mr. Wiseman referred to the possibilities of chalk.

Mr. Hennell said the storage of Thames water had been well considered from the water companies' point of view, and almost entirely from their point of view, and possibly not from that of the general public. He advocated the system of storage by gravitation, and contended that 300 million gallons, if not the whole 400 millions required, could be taken by this system at times when the flow of the river was considerably above the average. Storage by gravitation would be a great advantage over the present system and would be much cheaper. The Staines works would be very important as the first storage. The second should be at no great distance from Reading, and there should be another reservoir above Oxford. By whom was this work to be done? He could not help thinking that the proper authority was the body whose duty it was to look after the purification of the river. It seemed to him that the conservators who purified the water should store it and supply it to the companies, but what would be better would be that the future water body should also be made conservators of the Thames.

Mr. Hutchinson said the question was not who should be the authority, but whether we should turn away the water supply which was at our doors and go further afield. He was not at all disposed to admit that it was within the region of moral ethics to say we were entitled, because there was a large amount of water existing elsewhere, to take it away and bring it to another part of the country ; and no one could predict what change might take place hydrologically in the district. It appeared to him outside the question from a chemical standpoint that because the water was drawn from the Thames, the source of which was looked upon many years ago with suspicion, that therefore you are to condemn it. It was better to trust, in some respects, to the water from an area that required to be looked after with a great degree of care to prevent pollution rather than to put the fullest trust in the idea that you are securing pure water from an area that was beyond the possibility of contamination, when a single shepherd might pollute the water and bring disease to the millions who inhabited London.

Mr. Middleton, in reply, said that in some

* Apparently this is supposed to be a desirable state of things, and one which ought to be encouraged and continued.—ED.

cases the speeches had been a little discursive, and had not held very strictly to the matter of his paper. Professor Robinson's remarks were almost entirely alien to the paper. He began by saying that he advocated a system of storage which was different from the system advocated by the author. He, Mr. Middleton, had looked very carefully through his paper and failed to see that he advocated any system whatever. He had, in fact, avoided going into any engineering system outside the question of the supply of water. With regard to the system of storing water by gravitation, he could see conditions in which it might be advisable to adopt it for the present system, but Mr. Hennell had pointed out one weak spot, inasmuch as the storage must be some distance from London. He was bound to disagree with some of the figures given by Professor Robinson. For instance, he said that the cost of storing a million gallons at Staines would be 378*l.*, whereas it would be 184*l.*, and it was possible to make reservoirs so that the cost per million gallons would be as low as 100*l.* Mr. Hennell had said that the water question had only been considered from the companies' point of view. He thought that was scarcely correct, but, at any rate, the companies were endeavouring to do the best for themselves and the best for their customers in giving an ample supply of water. With regard to the question of population, he did not think that it would increase so rapidly as was anticipated; but the Royal Commission, after careful consideration, had accepted a particular rated increase, and he had accepted that because it was authoritative. It was extremely improbable that the population would increase at such a rate, however, and that being so, his point was consequently stronger; if the anticipated population was never arrived at there would never be any necessity to go to Wales. Unlike Liverpool, Manchester, and Birmingham, there was no need for London to go a long distance for water, because there was plenty of it within reach, and there was no possible reason why we should repudiate water at our doors.

The meeting closed at a late hour, Mr. Middleton stating that he would write the remainder of his reply and forward it to the secretary.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring Gardens, Alderman Dickinson, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Poplar Borough Council 11,360*l.* for pipe sewer and paving works, and 27,360*l.* for electric light installation; the Fulham Borough Council 24,145*l.* for dust destructor and street lighting; the Guardians of St. George's Union 17,300*l.* for the extension of infirmary; the Hackney Guardians 20,770*l.* for the erection of workshops and boundary wall and purchase of lands; and the Woolwich Guardians 10,475*l.* for the erection of a nurses' home.

Standing Orders—Dangerous and Neglected Structure Expenses.—The General Purposes Committee recommended, and it was agreed, that the following be substituted for paragraph 11 of Standing Order 249, relating to the recovery of dangerous structure expenses:—

"As soon as these accounts have passed the Finance Committee and been paid, the whole of the expenses incurred in relation to each dangerous structure shall be charged to the owner, and in cases where the expenses remain unpaid after demand has been made by the comptroller, the necessary proceedings for their recovery shall be taken by the solicitor."

Housing of Working Classes.—Mr. Samuel George Burgess, secretary and manager to the Middle Class Dwellings Company, Rowton Houses, Limited, and Wharncliffe Dwellings Company, Limited, was appointed manager of the new Housing Department at a salary of 800*l.*

Fire Stations.—The following recommendations of the Fire Brigade Committee were agreed to:—

"That the supplemental estimate of 25,000*l.* submitted by the Finance Committee in respect of the provision of additional fire brigade stations in London be approved, and that the estimate of 2,000*l.*, approved on February 1, 1898, in respect of the site for the Homerton sub-station, and the estimate of 2,000*l.*, approved on May 24, 1898, in respect of the station to be established at Highbury, be cancelled.

That the Council do sanction an expenditure of 11,373*l.* for the work of erecting the West Hampstead station; that the work be executed by the Council without the intervention of a contractor; and that the drawings, quantities, specification, and estimate be referred to the manager of works for that purpose. That the Council do authorise an expenditure of 860*l.* in connexion with the electric light installation at the West Hampstead station, and for incidental expenses arising out of the erection of the station.

That the estimate of 13,010*l.* submitted by the Finance Committee in respect of the proposed Perry Vale station be approved; that the Council do sanction an expenditure of 11,900*l.* for the cost of erecting the station; that the work be executed by the Council without the intervention of a contractor: and that the drawings and specification be referred to the manager of works for that purpose."

Applications under the London Building Act, 1894.—The Building Act Committee brought up the following recommendations, which were agreed to:—

Hackney, South (Width of Way).—Retention of a boundary fence wall in front of three buildings on the north side of Homerton-road, Hackney, adjoining Hackney-cut, such wall being at less than the prescribed distance from the centre of the street (the Lee Conservancy).—Consent.

Deptford (Cubical Extent and Construction of Building).—An addition to a workshop at the Hatcham Iron Works, Pomeroy-street, Hatcham, which workshop and addition will together exceed in extent 250,000, but not 450,000, cubic feet. (Mr. J. Donald for the General Engine and Boiler Company, Limited).—Consent.

Chimney Fire Penalties.—The following recommendations of the Fire Brigade Committee were agreed to:—

(*a*) That the following be the scale of payments to be demanded under Sect. 30 of the London County Council (General Powers) Act, 1900, in cases of chimney fire:—

Rateable value of premises.	Sum to be demanded. £ s. d.
Not exceeding 20*l.* a year	0 2 6
Exceeding 20*l.*, but not exceeding 30*l.* a year	0 5 0
„ 30*l.*, „ 40*l.* „	0 10 0
„ 40*l.*, „ 50*l.* „	0 15 0
„ 50*l.* a year	1 0 0

(*b*) That the recovery of penalties in respect of chimney fires be left in the hands of the solicitor of the Council.

(*c*) That the following be the procedure in cases of chimney fires—(1) that the chief officer of the Fire Brigade do report to the solicitor all cases of chimney fires other than those cases in which the poverty of the occupier of the premises is so apparent as to make it inexpedient for the Council to take action; (2) that the solicitor do then send to the occupier a demand note requiring payment within seven days of the sum mentioned in the scale, and if that amount be not paid within the time limited that the solicitor do take proceedings forthwith, unless there be special circumstances in the case which in his opinion render it advisable that the matter should be first reported to the Fire Brigade Committee.

(*d*) That a communication be addressed by the solicitor to the chief metropolitan stipendiary magistrate drawing attention to section 30 of the General Powers Act and mentioning the action which the Council has determined to take under that section.

Tenders.—The following tenders were accepted:—

Additional stabling, Kingsland Fire Station.—J. Jarvis & Sons, 293*l.* 19s. 6d.

Iron fencing, Archbishop's Park.—Hill & Smith, 455*l.*

Iron fencing, Battersea Park.—McVey, 191*l.*

Repair to Shakespeare fountain, Leicester-square-gardens.—R. Harding & Son, 299*l.* 10s.

Supply of shell at various parks, &c.—J. Weston & Sons.

Dangers of Electricity.—Replying to Mr. Baker, Mr. Parker said the attention of the Highways Committee had been called to the serious accidents which had happened in Liverpool and Sunderland, where they had the trolley system of electric tramways. No such danger would arise in London, because the Highways Committee had decided on the underground system.

Appointment of Electrical Engineer.—It was agreed to appoint Mr. John Rider Hele, the Chief Consulting and Resident Engineer for electric tramways and electric lighting under the Plymouth Corporation, Electrical Engineer to the Council at a salary of 1,000*l.* a year.

The Works Department.—The Housing of the Working Classes Committee brought up the following paragraph:—

Clare Market, Strand, Scheme—Sheridan, Beaumont, and Fletcher Buildings.—By the provisional order confirming the Clare Market, Strand, improvement scheme, under the Housing of the Working Classes Act, 1890, as modified by the Council's Improvement Act, 1899, the Council is required to provide accommodation on sites adjoining the cleared area for 750 persons of the working classes to be displaced by the carrying out of the scheme. Working drawings, specification, quantities, and estimate in respect of the dwellings to be erected at Duke's-court, one of the sites allocated for dwellings, are now completed. These dwellings, consisting of three blocks, will be known as Sheridan, Beaumont, and Fletcher Buildings, and will provide accommodation for 610 persons. In view of the completion of the plans and particulars of the work, it has become necessary for us to determine the steps to be taken for the erection of the buildings. It is essential that there should be no delay in putting the work in hand, as, until the new buildings are erected and ready for occupation, the Council is unable to remove the existing houses on the condemned area. We are urged by the Improvements Committee, who are dealing with the Clare Market properties in conjunction with the Holborn to Strand improvement, to make provision as quickly as possible for the persons to be displaced, and we have therefore, in order to save time, advertised for tenders to be delivered to the Council on 26th inst. for the erection of the dwellings. We propose to submit to the Council the working drawings and estimate of cost on the same date, and the Finance Committee will, at the same time, report the estimated financial result of the erection of the buildings. We recommend that the course taken be approved.

Mr. Goulding, M.P., said the decision of the Committee was a justification of the policy of those who held that the erection of such dwellings could be done more cheaply and expeditiously by contractors than by the Department.

Mr. Edward White said the work could not only be done better but cheaper by contractors.

Mr. Purchese added that it was impossible for contractors to do work as good as that performed by the Department.

Mr. D. S. Waterlow said the decision of the Committee was because the dwellings were urgently needed; but the Committee's policy had not changed.

The matter then dropped.

Bills Opposed.—On the motion of Mr. Cornwall, Chairman of the Parliamentary Committee, it was decided to oppose the following Bills, which are to be introduced in Parliament this Session:—Gas Light and Coke Company's Bill, London and India Docks Company (Lighterage Rates) Bill, London and India Docks Company (New Works) Bill, and South Metropolitan Gas Company's Bill.

Gift of a Fountain.—The Parks Committee reported that a lady had offered to present a drinking fountain to be erected in Archbishop's Park, Lambeth.

The gift was accepted by the Council.

Russell-street, Drury-lane.—The Improvements Committee recommended and it was agreed:—

"That the estimate of 4,133*l.* 6s. 8d. submitted by the Finance Committee be approved, and that a contribution be made by the Council on the usual conditions of one-third of the net cost of widening Russell-street, between Catherine-street and Drury-lane, to 50 ft., proposed to be undertaken by the Council of the City of Westminster, such contribution not to exceed the sum of 4,133*l.* 6s. 8d."

Proposed Enlargement, Brockwell Park.—It was agreed to contribute 2,250*l.* towards the cost of acquiring certain land for adding to Brockwell Park.

The Council adjourned soon after six o'clock.

BUILDERS' FOREMEN'S ASSOCIATION:

ANNUAL DINNER.

THE seventh annual dinner of this Association was held on Saturday last week at the King's Hall, Holborn Restaurant. Mr. Henry Hibberd presided, and amongst those present were Messrs. E. C. Ackermann (the President), J. Hibberd, G. Hibberd, Sydney Butler, G. H. Webster, and W. Cook (secretary).

After the toast of "The King and Royal Family,"

The Chairman proposed "The Builders' Foremen's Association." He said it was at such gatherings as this that they became intimately acquainted with one another, and that enabled them to assist each other in business and often in their private matters. This was a sort of mutual help association, for if a member were out of employment, all the others would be looking out for work for him.

Mr. E. C. Ackermann, the President, in reply,

said that the Association had been established a little over eight years, and although it might till be termed a budding Association, it had come to stay. Lectures and smoking concerts had been held during the winter, and they had been very successful. They had lately formed a system of insurance in connexion with the Association, the fees of which were very small.

A toast in honour of Mr. W. Cook was proposed by Mr. Ackermann, who referred to Mr. Cook's services as secretary, and Mr. Cook, replying, expressed his thanks.

Mr. G. H. Webster submitted "The Building Trades," and said that master builders had been objecting very strongly to their foremen being members of a trade union. He quite agreed with them, and he did not see how a builder's foreman could do his duty as a foreman and at the same time be a member of the men's trade society. He might be ever so good a man and ever so good a foreman, but it was impossible for him to serve two masters. The master builders in the north of England were formulating a scheme for inducing foremen to withdraw from the trade society, and recompensing them in some way financially for any loss they might incur. He thought the London builders would take the matter up also.

Mr. McKenzie, in responding, said that one of the things which struck them in these days was that everybody bemoaned the fact that they were losing their ability and capacity for building great structures. It was considered that the early Greeks and Romans were the masters of the art, but he ventured to think that the builders of these days were quite equal to the occasion; they had shown by the great transformation that had and was taking place in London that the builders of to-day were worthy successors of the ancients who showed them how to build. So long as they joined together in such associations as this, where members could help one another, improve their skill, and receive culture in the arts and sciences, so long could they expect the men of London to do well.

A toast to the visitors, proposed by Mr. W. Read, and to the chairman, submitted by Mr. Sydney Butler, completed the list.

METROPOLITAN ASYLUMS BOARD.

THE weekly meeting of this Board was held on Saturday at the Board's offices, Victoria Embankment, Sir E. Galsworthy presiding.

The tender of Messrs. Bradford & Co., of High Holborn, of 4,580*l*., was accepted for supplying and fixing the necessary laundry machinery at the North-Eastern Hospital. The other tenders were: Lees & Harrison, Leeds, 3,214*l*. 16s. 11d.; Lighting Corporation, London, 4,243*l*; Matthews & Yates, Swinton, Lancashire; Berry & Sons, Westminster, 4,965*l*.; Potter & Sons, 4,991*l*.; J. & F. May London, 5,100*l*; Morwood, Sons, & Co., Sheffield. 5,178*l*.; Wenham & Waters, Croydon, 5,280*l*.; Fraser & Co., London, 5,329*l*.; Douglas & Sons, Putney, 5,349*l*; Thomas & Taylor, Finsbury Park, 5,362*l*; Macintosh, Brocklehurst, & Co., London, 5,691*l*.; Cherry Tree Machine Company, Blackburn, 6,102*l*.; Manlove, Alliott, & Co., London, 6,405*l*.

The Finance Committee reported having considered the question of the mode of defraying excess cost of building works over amounts authorised by the Local Government Board's order. The Committee had hitherto authorised small amounts to be defrayed out of current rates without first obtaining the Board's formal approval thereto. They thought, however, that they should have a general authority vested in them to deal with such matters, and they recommended that excesses not exceeding 500*l*. be defrayed out of current rates. This was adopted.

The Hospitals Committee presented a copy of an account they had received from the accountant detailing the cost of executing the ward pavilions (8 to 18) and workshops at the South-Eastern Hospital. The total cost was 21,721*l*. The loan sanctioned by the Local Government Board was 21,350*l*., which left an additional order required for 371*l*. 18s. The Committee recommended that an application be made to the Local Government Board for an order sanctioning the further expense of 371*l*. 18s. This was adopted.

The same Committee presented a return showing that 11,515*l*. 7s. 7d. was spent during 1900 in painting works at the several hospitals.

The Works Committee reported upon the tenders received for the erection of White Oak School:—

They recommended [and the Board agreed to accept the tender of Mr. Charles Wall, of Ashburnham Works, Chelsea, in the sum of 112,324*l*. The other tenders were:—Martin, Wells & Co., Vauxhall, S E., 115,000*l*.; J. J. Wise, Deal, 116,035*l*.; W. H. London & Sons, Tooting, 121,888*l*; B. E. Nightingale, Albert Embankment, 133,227*l*.; Stephens, Bastow & Co., Bristol, 135,229*l*.; R. L. Tonge, Watford, 138,652*l*.; Foster and Dicksee, Rugby, 140,270*l*; Leslie & Co., Kensington, 14,1450*l*.; Balaam Bros., Old Kent-road, 151,256*l*. The total cost of erecting, fitting up and furnishing this school is estimated at 137,944*l*.

ARCHITECTURAL SOCIETIES.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fifth ordinary meeting of the fifty-third session in connexion with the Liverpool Architectural Society was held on the 4th inst., at the Law Library, Castle-street. Messrs. Segar Owen and James Strong were elected as Fellows to the Society, and Mr. A. C. Broadbent as Associate. Mr. G. Hastwell Grayson was elected joint secretary, vice Mr. F. E. P. Edwards, who had resigned. The members afterwards considered a draft memorandum and articles of association in connexion with the proposed incorporation of the Society, which had been prepared by the council in accordance with the resolution passed at the last annual general meeting, and, after considerable discussion, the articles were left over for further consideration. The paper by Mr. A. S. Flower, M.A., entitled "Old English Architecture: a Retrospect and a Suggestion," has been postponed until April 15th.

ARCHITECTURAL ASSOCIATION OF IRELAND.—At the general meeting of this Association held at the Grosvenor Hotel, Dublin, on Tuesday, the 5th inst., the following resolution was proposed by Mr. R. M. Butler, and seconded by Mr. F. G. Hicks:—"That the Architectural Association of Ireland, in general meeting assembled, desire to record their sense of the great loss which the nation has sustained by the death of her Majesty Queen Victoria, and their sympathy with his Majesty King Edward VII. and the Royal Family in their bereavement." The resolution was adopted in silence, the members standing. Mr. P. J. O'Reilly then delivered a lecture dealing with the history of Mont St. Michel, in Normandy, and descriptive of its numerous features of architectural interest. The lecture was illustrated by upwards of 60 lantern slides.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆLOGICAL INSTITUTE. — A general meeting of this Institute was held on the 6th inst., Judge Baylis, K.C., in the chair. Professor T. McKenny Hughes, M.A., F.R.S, F S.A., read a paper on the forms of implements of war and other appliances in use among primitive races of past and present times, pointing out and illustrating by actual examples that many of them were suggested by natural forms. On this occasion he confined himself chiefly to bone objects, first calling attention to the suitableness of the material and to its universal occurrence. He exhibited specimens of small bone graving tools from recent mediæval Saxon, Roman, and earlier deposits. He showed apple scoops and flayers made of the limb bones of ruminants, in which one end of the bone remained untouched. He produced some bones from the heads of common fish which almost exactly resembled the fish-hooks made from turtle bone, and used in the South Sea Islands. He was of opinion that the form of the Fijian battle-axe was suggested by the ribs of cetacea, and pointed out the variation in the shape of the proximal end as we approach the head of the animal, and thought that the different ribs may possibly account for the original manufacture of different forms which are observed in the axes, rather than that they were a modification of one original type of weapon. He criticised the statements of some authors respecting the widespread use of the boomerang, especially as to the cateia having been a boomerang. He thought that the early notices, which described that weapon as having been hurled with a thong (amentum), developed into the idea that it had a string attached to it; next, that it could be drawn back by the string; and lastly, dropping the mention of the string, that it was so thrown as to return to the thrower, and, therefore, must have been something like a boomerang.

Mr. R. E. Goolden, F.S.A., read a paper by Dr. Russell Forbes on "Recent Excavations in the Forum at Rome." The report dealt especially with the remains of the Regia, the official residence of the Pontifex Maximus, which lies between the Via Sacra and the Temple of Vesta. Dr. Forbes gave many quotations to show what history relates about the palace at different periods, which the excavations have confirmed. He also reported on the more recent discovery of the Fountain of Juturna, with its adjoining altar and the inscription. Messrs. Hilton, Wilson, and Rice took part in the discussion.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The sixth meeting of the Session was held at 32, Sackville-street, on February 6, Mr. C. H. Compton, Vice-President, in the chair. The paper of the evening was read by the Rev. C. H. Evelyn White, the subject being "Some Recently Discovered Earthworks: the Supposed Site of a Roman Encampment at Cottenham, Cambridgeshire." A large plan of the earthworks was exhibited on the easel, and in order that the paper might be more readily followed smaller copies of the plan were furnished to the members and visitors. These earthworks are of a very singular nature, extending over 20 acres of ground, and have hitherto been unnoticed, so far as the writer was aware. Immediately to the north of Cottenham Parish Church is the Cottenham Lode, and abutting upon this lode to the north-west is an unploughed field of about 8½ acres, in which field are situated the principal entrenchments. This field is bounded on the north-east by the Car Dyke; while the roadway known as the Setchell Drove, running nearly parallel with Cottenham Lode, encloses it on that side. There are visible large rectangular ramparts of chevron, or zig-zag formation, with a ditch on each side; the formation extends into the field beyond the Setchell Drove, which cuts through it, and there are remains of geometrically formed entrenchments in the surrounding fields. The trenches are well above the old water level of the Car Dyke, and vary in depth from 6 in. to 2 ft. Mr. White exhibited a large number of pieces of Roman and other pottery, which is found in abundance all over the site; Samian, Upchurch, and red ware, some bearing potters' marks and decoration. One fragment of the neck of a vase, or urn, bore an unusual type of ornament in the shape of a series of straight lines going up from the collar. The only article of personal adornment found was a portion of a bone pin having a series of notches for ornament, somewhat resembling one illustrated in Keller's "Lake Dwellings." The question to be decided by antiquaries was whether these remains indicate the site of a British settlement or of a military position, as the peculiar formation of the entrenchments would rather suggest. At all events, we had here ancient earthworks hitherto apparently unnoticed, Roman pottery in abundance on all sides, surrounded by lines of British and Roman communications, and near to an ancient waterway that afforded means of access to the larger rivers in very early times. In the discussion which followed the paper, Mr. Bull, a resident of Cottenham, who had been largely instrumental in bringing these remains to notice, gave his impressions of their nature.—Mr. I. C. Gould pointed out that the character of the pottery exhibited, which was of the fourth century, and probably late in that, showed that the place had been occupied at that date. He also said that the so-called Samian ware was not real, but British imitation of Samian, and was typical of a late period. The chevron, or zig-zag formation of rampart, was entirely new to him. The Rev. H. J. D. Astley remarked upon the seemingly unique character of the earthwork, contrasting it with the round or oval shape of the British fortifications and the Roman, which were rectangular. It is probable that further explorations will take place, when the rampart will very likely be cut through and sections obtained.

AN IMPROVEMENT IN WHITEHALL.—The Westminster Borough Council have commenced an improvement in Whitehall. The broad pavement along the Government Offices was very irregular; now it is being made rectilineal from end to end, and in some places it is necessary to extend the pavement into the roadway in order to accomplish that object. The surface was very uneven, not having been repaired for some years; now it will be reflagged. The work is at present proceeding in front of the Horse Guards, the Paymaster-General's Office, and the Admiralty.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—At a meeting of the Institution of Junior Engineers, held at the Westminster Palace Hotel on Friday, February 8, the chairman, Mr. Percival Marshall, presiding, a paper was read by Mr. L. F. Awde on "Electric Power Supply in the Metropolis." After emphasising the importance of the subject of a cheap and general supply of electricity for power purposes, as evidenced by the attention devoted to large power distribution schemes during the last Session of Parliament, the author referred to the comparatively small amount of electric power at present used in London, and dealt with the difficulties attending the supply of electricity for power purposes from the existing stations in the metropolis at a price that could really be considered as reasonable, and which would induce the manufacturing community generally to adopt this form of energy for machine driving, &c. The disadvantages attaching to the positions of most of the various stations and their results upon the working costs were dealt with at some length, and in this connexion a curious fact was adduced, viz., that the average works costs for 1899 were exactly the same for both local authorities and companies, being 1·91d. per unit in both cases, the advantage resting with the local authority only in the matters of rates and management to the extent of 0·37d. per unit. After a reference to the attitude of the local authorities as to assessments of electric supply stations—when these were not their own property—the author protested against their proceedings with respect to the question of smoke nuisance, and spoke strongly upon the action of the colliery proprietors last year in cornering the coal market, the results of which were so severely felt by all the electrical undertakings, and hinted at some counteracting remedy that it might be necessary to find, should their tactics be sustained or repeated. He expressed himself in favour of one large station down the river, generating for power purposes and street lighting only, and submitted detailed estimates for such a station of a plant capacity of some 33,000 h.-p., the whole scheme involving a capital expenditure of over one million sterling distributed as follows, the station estimates providing for five triple-expansion sets of 3,500 k.w. each and two sets of 2,500 k.w. :—

	£
Lands	30,000
Generating station	645,000
Mains, &c.	105,000
Distributing centres	288,000
	£1,068,000

The system proposed was a 3-phase generation, and distribution at extra high pressure to transforming centres, the low-pressure distribution to consumers' premises being at 500 volts from rotary convertors and batteries. The costs of working were set out in detail, showing a total cost of under ½d. per unit, the maximum selling price being suggested at 1½d. per unit, or 1⅛d. per h.-p. hour. In the case of factories in the immediate neighbourhood of the generating station, and with a view to encourage the erection of such factories, the special price for these was put at the low figure of 1⅛d. per unit, equivalent to very little more than ¾d. per h.-p. hour. The author dwelt upon the fact that in this country, and especially so in London, electrical engineering was a long way behind the times, and had been far outstripped in the direction indicated by American and Continental practice; but if such a scheme as he had propounded could be inaugurated, some of the grounds for self-reproach would thereby be removed, and the position of the metropolis as a manufacturing centre substantially improved.—As a sequel to the paper, a visit has been arranged for Saturday, February 23, to the Willesden station of the Metropolitan Electric Supply Company.

BOOKS RECEIVED.

EXERCISES IN GRAPHIC STATICS: Part 2: Beams and Girders. By G. F. Charnock, Assoc.M.Inst. C.E. (J. Halden & Co., Manchester.)

PLYMOUTH EYE INFIRMARY.—We are asked to state that the stoves used in the wards of the above-named building, described in a former issue (page 143 *ante*), are by Messrs. Shorland & Brother, of Manchester.

CHARING CROSS, EUSTON, AND HAMPSTEAD RAILWAY EXTENSION BILL, 1901.

THE following has been addressed by the Royal Academy to the London County Council on the subject of the above-named Bill :—

"We, the undersigned Members of the Royal Academy, do most earnestly petition the London County Council to oppose the above Bill, in so far as it affects Hampstead Heath.

We should deplore any tunnelling under the Heath, and the erection of any railway stations, and other railway buildings within the boundaries of the Heath, the wild aspect of which is of incalculable value to London, and to all lovers of natural beauty.

Edward J. Poynter, President.
Ernest Crofts, Keeper.
Briton Riviere.
William D. Yeames.
Val Prinsep.
Thos. Brock.
B. W. Leader.
Andrew C. Gow.
Seymour Lucas.
Hamo Thornycroft.
W. Q. Orchardson.
J. MacWhirter.
Frank Dicksee.
John S. Sargent.
H. H. Armstead.
Fredk. Goodall.
George D. Leslie.
E. Onslow Ford.
Alfred Gilbert.
G. Aitchison.
J. C. Horsley.
Fred. A. Eaton, Secretary.

February 4, 1901."

We need hardly say that we are entirely in sympathy with the above protest, and hope it will have the weight with the London County Council which it should have.

Correspondence.

To the Editor of THE BUILDER.

"BUILDING CONTRACTS FROM A BUILDER'S POINT OF VIEW."

SIR,—I have read with some interest "Clerk of Works'" comments on the above, and will, with your permission, give him my ideas on the subject as a contractor's agent.

With regard to the fact that clerks of works do represent the architect there is no doubt, but whether they do so truly and in the way the architect would wish is an open question, or whether they at times place the architect in such a position that he must either side openly with the contractor against his clerk of works (which he would be very loath to do) or must cause the contractor unnecessary annoyance and expense; and as for the information supplied by the clerk of works, my own experience is that it is very limited, and then confined to verbal instructions. I have never known a clerk of works give a signed working detail drawing or definite written instructions.

With regard to "Clerk of Works'" wish that Mr. F. Cowlin may write a paper on clerks of works so that he may criticise it, this is eminently characteristic of some clerks of works, who wait until the work is done and then criticise it. How much better would it be if instead of his waiting for any one to read a paper on clerks of works, he would at an early date give your readers the benefit of his suggestions, so that these improved methods may be put into operation! I should also be glad if he will explain what he means by a builder being more in touch with his foreman.

As regards the builder making a proper agreement with the merchant in respect to the materials he supplies, "Clerk of Works" must know, or should know, that no manufacturer would agree to this. They would willingly agree to supply goods according to sample or as is generally recognised in the trade; but who would risk having their goods thrown on their hands at the discretion of an architect, more especially seeing that damage may be done to them in transit? Not only that, but architects at the present time often specify the manufacturers who shall supply the different materials, thus further tying the builder's hands.

Coming to the question of the quality of the work, he gives your readers his method of dealing with a dispute which is fair and reasonable, and which, I think, no foreman could object to; but at the same time, it may be of interest to the foreman to know of a method I usually adopt when unable to agree with a clerk of works. I tell him that as I consider the work is according to the contract, it is my duty to keep on with the work, and as he considers it is not, it is his duty to stop the works, and I ask him to give me a written order to stop them until further notice, so that my employer and the architect may settle the matter; and I have found that most clerks of works are rather shy of maintaining their opinions to this extent.

With regard to delays, the principal cause I have found is that the detail drawings are not supplied at the same time as the contract, and a builder has to be cautious or he may find the architect make a variation and the material will then be thrown on his hands.

Coming to "Clerk of Works'" remarks as to a foreman not telling his employer or the office that the materials are not being delivered fast enough, I consider it one of the most essential parts of his duties, and when he finds it necessary to write on that point, to do so in a way there is no mistaking.

With regard to the setting out, I fully agree with him; the clerk of works is welcome to check the works when set out. Help in the actual setting out, I am afraid, would more likely prove a hindrance.

My own opinion is that the great mistake clerks of works make is that they start with the idea that the builder or his foreman is going to try and "have them"; if a suggestion is made, they look upon it as a kind of trap for them to fall into, and so act accordingly, and this it is which so often leads to friction. CONTRACTOR'S AGENT.

The Student's Column.

SANITARY FITTINGS AND PLUMBING.

7.—SINKS: WASTES AND OVERFLOWS.

IN the common sink-of-all-work, the waste-outlet generally takes the form of a simple brass grate, the stone or fireclay having a rebated hole, as shown in fig. 1, to receive it. A cup of lead (*a*), with a flange or rim at the top, is bedded in red-lead cement, and the brass grate (*b*), with the edge previously tinned, is then soldered to the flange of the cup; sometimes the grate is secured by pouring molten lead around it instead of by soldering. The lower end of the cup is soldered to the inlet of the lead trap. At one time glazed fireclay grates and shanks were often used, but they are not as durable or as satisfactory in other respects as brass grates. The area of the openings in the grate ought to be at least equal to the area of the cross section of the trap and waste-pipe, so that these will be effectively cleansed by the flush of water. It is a good plan to place in every sink a small perforated metal strainer for the reception of garbage, such as tea-leaves and scraps of food, so that these do not choke the grate or the trap.

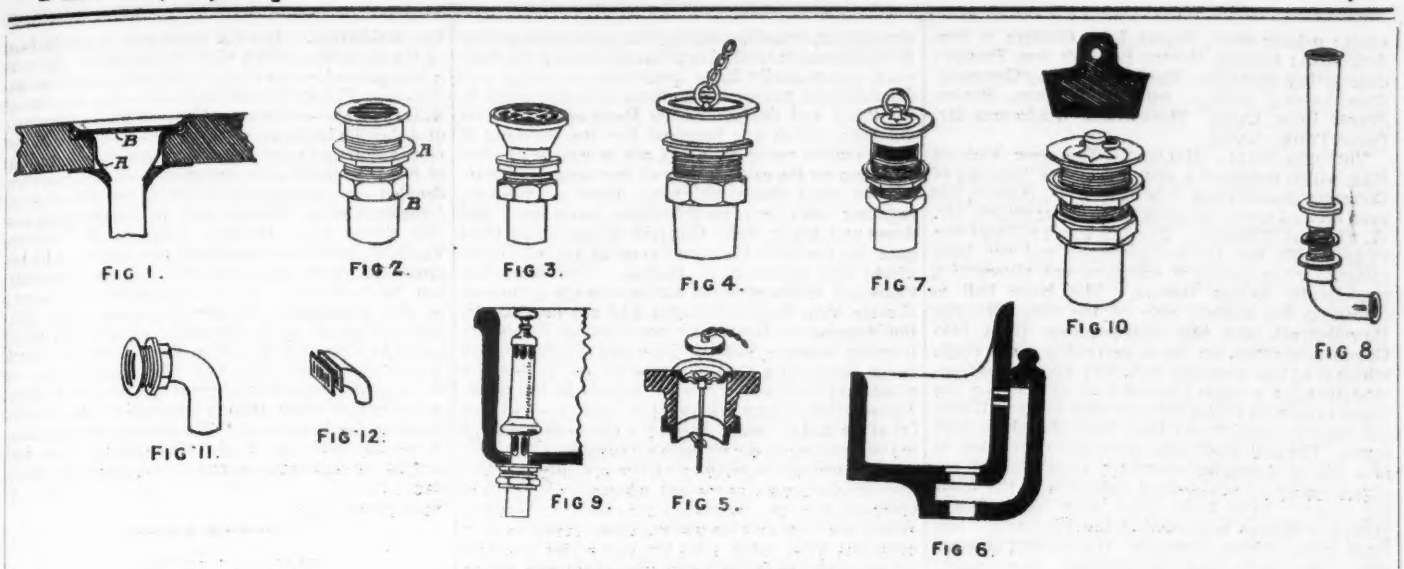
Another method of fixing the grate is by means of a brass coupling with fly-nut (*a*), as shown in fig. 2. The brass tail-piece (*b*), after being tinned, can be soldered to the inlet of the lead trap by an ordinary wiped joint. Fig. 3 is an improved form with enlarged grate; the dimensions are as follows :—Diameter over flange 3⅝ in., diameter over screw 2¼ in., bore of union tail 1½ in.

Similar arrangements to those shown in figs 1 and 2 are often adopted for butlers' sinks, but the grating is placed at a lower level, so as to leave a socket above it for the reception of the plug. Fig. 4 shows an improved form of plug and washer for large sinks or baths; the diameter of the plug and grating is 3 in., diameter over flange 4½ in., diameter over screw 3½ in., and the outlet tail is either 3 in. bore throughout or tapered to 2¼ in., the latter being preferable. If a tail-piece has been formed in the fireclay, the device shown in fig. 5 may be used. Fig. 7 in our last article shows the common form of waste-plug for lead-lined sinks. For wood sinks, the flange of the washer is sometimes square and fixed with four screws, one at each angle.

In fireclay sinks with overflows formed in the body of the ware itself, after the manner illustrated in fig. 6, page 118 *ante*, it is necessary to have an opening in the side of the brass washer to receive the overflow. Fig. 6 in the present illustrations is a section of Twyford's "Ruchill" hospital sink, showing the overflow in detail. This sink is made to stand clear of the wall and is glazed on the back. A loose enamelled fireclay plug or cover is provided for the top of the overflow. The form of washer for such an arrangement is shown in fig. 7, with union for lead pipe. In the modification known as the "safety plug" the plug can be raised, but cannot be withdrawn; with this plug a pull-up arrangement is required, which, by a quarter-turn, will hold the plug some distance above the washer, so that the water can escape.

The waste and overflow shown in fig. 7, page 118 *ante*, are extremely simple, and can be easily kept clean. Of course, the same overflow can be used with an ordinary chain and plug instead of the spindle and safety plug shown in the illustration.

Combined wastes and overflows are now made in almost endless variety, but they are,



Illustrations to Student's Column.

as a rule, merely modifications of the old standing waste and overflow, of which the simplest form is shown in fig. 8. The vertical tube is made to fit into the washer of the waste-outlet, and so take the place of the plug. When the tube is in position and water is turned into the sink, the water will rise to the level of the top of the standing waste, and will then overflow down the standing waste to the waste-pipe below. A simple improvement consists in attaching the standing waste to a hook and knob above, so arranged that, when the knob is raised and slightly turned, a projection on the spindle passes into a corresponding socket or over a bar, and holds the standing waste clear of the grated outlet; by a backward turn of the knob, the waste is released and drops back into the washer.

Sometimes these standing wastes are concealed in small chambers formed at the back of the sink, but this arrangement cannot be recommended, as neither the chambers nor the standing wastes can be kept clean. The grease and other objectionable matters present in the water of sinks will soon render concealed parts of the apparatus extremely foul, and it is, therefore, highly desirable that standing wastes should be exposed to view, and should be easily detached for cleaning. A very good form of waste (Shanks's "Simplex") is illustrated in fig. 9, which is adapted either for lavatories or sinks. To empty the basin, the standing waste is raised and slightly turned; a further turn will permit the waste to be taken out. If desired, the waste is furnished with a set-screw, so that it cannot be removed from the guide; this arrangement is suitable for asylums, schools, &c. Standing wastes are generally made of copper, brass, or gun-metal, and often have a rubber seating around the lower end to form a watertight joint with the washer. Porcelain standing wastes have also been made, and xylonite has recently been pressed into service. Porcelain and xylonite, however, will not stand rough usage, suitable though they may be in other respects; for this reason porcelain cannot be recommended, and xylonite only for lavatories in private houses, where they will be carefully used. They are not suitable for sinks.

Waste-plugs are generally of brass, carefully ground to fit the washer, but the weight of a large plug of this kind is so great as to damage the enamel of the sink if the plug is allowed to fall upon it from some height. A slight improvement is effected by covering the plug with indiarubber, as shown in fig. 10. Plugs of solid indiarubber are better in this respect, but are apt to get out of shape, and vulcanite is now frequently used with satisfactory results. Sunk plugs have the advantage of not forming any projection above the bottom of the sink.

The size of the waste-plug and grate will depend to some extent upon the capacity of the sink, but the larger they are the quicker will the water escape, and the better will be the scour through the trap and waste-pipe. As a rule, the waste-pipes of sinks should not be less than 1¼ in. in diameter, and need not be more than 2 in. It is a good plan to have the plug and washer at least ¼ in. more in diameter than the trap and waste-pipe, as the trap is thus more easily kept clean. This can be done by means of the tapering washers and tails illustrated in figs. 3 and 4, or by using a washer and tail of larger size than the trap, and belling out the inlet of the trap as required.

Several kinds of overflow have already been described and illustrated, from the old-fashioned pottery overflow in fig. 3, page 118 *ante*, to the more modern forms of pottery overflows and of combined metal wastes and overflows. Two simple overflows for connexion with lead pipes are shown in figs. 11 and 12. In the former the joint is made tight by bedding the metal in suitable cement and screwing the grating to the bent tail-piece; in the latter the grating is fixed with two screws to the back plate. These overflows and the pipes connected with them cannot be easily cleaned, and are therefore not as satisfactory as some of the other kinds which have been described.

GENERAL BUILDING NEWS.

TOWER, ST. MICHAEL'S CHURCH, BOURNEMOUTH.—On the 5th inst. Bishop Sumner dedicated a new tower which has been erected in connexion with St. Michael's Church, Bournemouth, at a cost of 5,000*l.* The tower has been placed in a nearly central position on the south side of the church, and in style is a rather late variety of Early English. A figure of St. Michael stands above the gabled entrance. The architect is Mr. J. Oldrid Scott, of London.

LEICESTER BOROUGH ASYLUM.—On the 7th inst. the new buildings of the Borough Asylum, which, exclusive of land, have been erected and furnished at a cost of 94,743*l.*, were opened. The extension, which is to the east of the old building, and comprises a complete asylum for males, provides accommodation for 335 patients. The total number of beds now provided in the old and the new buildings is 855. Plans were prepared by Mr. Hine, of London, and Messrs. Moss & Sons, Limited, of Loughborough, obtained the building contract, and began the work in the autumn of 1897. Good progress was made till 1899, when the strike in the building trade hindered the erection of the superstructure. From an exterior point of view the buildings present no strikingly attractive feature. On the contrary, they are severely plain, the red brick being relieved only by a dressing of stone. There is, however, a peculiarity about their formation, the wards having been arranged in blocks in echelon, but as a continuous building, with a main corridor in the rear, giving a separate approach to each ward. The formation of the site, which slopes considerably to the south, made this arrangement necessary. It is by no means a disadvantage, as the whole of the wards look out on the south, and receive much more sunshine than would otherwise be the case. Centrally placed between the new and old asylums are the new administrative buildings, comprising, on the north side, facing Gipsy-lane, an official block with a new principal entrance, and rooms for committee and officers. The stores, with an inclined sunk roadway for delivery of heavy goods to the basement, are between the entrance block and the kitchens and offices, and to the extreme south is the recreation hall, 84 ft. long by 44 ft. wide. Adjoining the recreation-hall is a small detached block, containing rooms for the assistant medical officers. Flanking the administrative buildings on either side is a corridor leading from the principal entrance, kitchen, stores, &c., to the several wards, that on the west side for the female asylum, and on the east side for the male asylum. Adjoining the male corridor is a complete suite of rooms for the male attendants, comprising a sitting-room, messroom, and billiard-room, with a number of bedrooms over. To the north of the attendants' rooms is a large bakery, with a two-decker oven, and machinery driven by electricity. On the north side of the main corridor are the engineering workshop, comprising a boiler-house, containing three Lancashire boilers, 28 ft. long by 7 ft. diameter, engine-house, containing two direct driven dynamos for lighting the whole of the new buildings with electricity, a battery-room, with storage cells sufficient for providing light through the night; also engineers' workshops, smithy, coal store, &c. To the east of the boiler-house is the workshops' yard, surrounded by shops for plumbers, painters, carpenters, upholsterers, tailors, and cobblers, a bricklayers' shed, and an office and store for the clerk of works. The day rooms, dormitories, and corridors are warmed by ventilating radiators, and the ventilation is effected by means of extraction flues built in the walls and gathered up in the roof as chimneys. The single rooms are treated in a special way to prevent the patients from injuring themselves against any heated metal. In a room sunk below the level of the boiler-house is fixed a receiver, which collected the condensed water from the whole apparatus. The electric installation has been carried out under the supervision of Mr. Colson, and comprises a total of over 1,000 16-candle power lamps and two motors, at a cost of about 4,000*l.*—*Leicester Post.*

CO-OPERATIVE PREMISES, EDINBURGH.—Premises for a drapery branch of St. Cuthbert's Co-operative Association have just been completed in Nicolson-street, Edinburgh. Mr. T. P. Marwick, of Edinburgh, was the architect.

ARDROSSAN AND SALTCOATS JOINT HOSPITAL.—A new infectious hospital has just been opened for the reception of patients at Springvale. The site lies about equi-distant from the centres of the Burghs, and is situated on the higher ground behind Saltcoats. The buildings are four in number, and are designed to accommodate nominally fourteen patients with the necessary staff; in the event of an epidemic, however, this number may be doubled without unduly crowding the wards. The administrative block provides accommodation for a matron, four nurses, and two servants, and has kitchen offices of sufficient size to do the culinary work for the whole establishment. The ward block is divided into three sections, thus allowing for the treatment of three distinct infectious diseases. Each set of wards has its own nurses' duty-room, bath-room, &c., and is entirely disconnected. The wards are well ventilated and heated by hot-water radiators in addition to the fireplaces. All the sanitary fittings are of the most modern description. The laundry and discharge-block contains a well-lighted wash-house and laundry, with drying-room attached; boiler-house, mortuary and visitors' room, ambulance-house and disinfecting-rooms. Connected to this building are the rooms where the patients are discharged, being bathed and supplied with clean clothing before leaving the premises. The porter's lodge, which is situated at the gates, is a compact little cottage, and controls the access to the grounds. The sewage is treated before leaving the site by the Septic Tank system, the apparatus being designed and supplied by the patentees, Messrs. Cameron, Cummins, & Martin, of Exeter. The roads and paths leading to the various blocks have been formed, and the avenue leading to the site has been re-made. Lamps have been erected, and hydrants provided to cope with any outbreak of fire. The whole work has been carried out from the designs and under the direction of Messrs. Fryers & Penman, architects, Largs. The contractors for the various works were:—Brick work, Messrs. Greig Bros., Kilwinning; joiner work, Mr. Thomas Miller, Saltcoats; slater work, Messrs. Hogarth & Co., Ardrossan; plumber work, Mr. T. B. Stevenson, Ardrossan; plaster work, Messrs. Murray & McCallum, Salt-

coats; painter work, Messrs. John Gilfillan & Son, Ardrossan; heating, Messrs. Boyd & Son, Paisley; disinfecting apparatus, The Reck Heating Company, Copenhagen; railings, gates, and lamps, Messrs. Frazer Bros., Largs. The clerk of works was Mr. James Potter, Largs.

VICTORIA HALL, HALIFAX.—The new Victoria Hall, which occupies a position at the juncture of Commercial-street and Fountain-street, Halifax, has been erected from the designs of the architect, Mr. W. Clement Williams. The site was a difficult one to deal with, but the wedge-shaped end has been utilised for the principal entrance, and allows of a semicircular lecture theatre. The large hall is placed on the westerly side of the site, adjoining Powell-street, and the shop-premises front into Commercial-street on the easterly side. The stage, which is at the northerly end, will give full accommodation for a large orchestra as well as for the organ presented to the town by Miss Porter. Under the stage dressing-rooms have been placed for both sexes. The hall itself, and especially the ceiling, is of a highly decorated character, consisting of enriched panels of ornamental outline, and the leading spaces have been filled with processional groups of figures representing the Fine Arts. The large cove, which connects the ceiling proper with the wall line, is divided into panels filled in with ornamental fibrous plaster medallions. Ranges of fluted pilasters face round the hall in the clearstory down to the balcony level. The gallery fronts are enriched with variated scroll work, supporting Cupids bearing panels on which are inscribed the names of the chief musicians and poets of the century. The proscenium consists of a large archway, having deeply recessed panelled soffits. One feature of the scheme is the mode of support of the galleries. The cantilever principle has been put into use, with the result that the necessity for pillars is quite obviated, while at the same time safety is assured. The floor of the area is supported on spiral springs, which, by a block arrangement introduced by the architect, becomes in a few minutes a solid floor. From the broad corridors, passing round the whole of the hall proper, there are seven entrances into each section of the hall, and connected also with the four curves of each corridor is a panic staircase communicating with no other portion of the premises. All the doors are made to open outwards, and are fitted with automatic locks. The whole of the floors are composed of concrete and steel. From the principal entrance hall a broad staircase ascends to the grand circles, with communication on either side of the area. The northerly side of the staircase landing is divided into open arcade work, pilastered and corbelled. The lecture theatre is approached from the grand staircase by two separate entrances, and both the large and the small halls may be used at the same time without interfering one with the other. Accommodation has been provided for a lounge and refreshment-rooms, cloakrooms, and other offices. There are eight lock-up shops, and a semicircular restaurant in the basement. The style of the building externally is English Renaissance. The contractors are as follows:—Mason and joiner, J. Charnock & Sons; plasterer and slater, J. Bancroft & Sons; plumbing and heating, J. Naylor & Son; fibrous plastering and ornamental modelling, Jonas Binns & Sons, who also are the painters and decorators; electric lighting, H. Wright, who has worked under the scheme of Shepherd & Watney, electrical engineers, of Leeds; stained-glass dome, William Pape, Leeds; other ornamental work, Reuben Bennett, Manchester; concrete and terrazzo flooring, G. Greenwood & Sons; ventilators, W. Crossley; ironfounder and steel work, John Berry; structural steel work, A. Handyside, Derby; mosaic pavement, Maw & Co., Salop. The accommodation of the hall is exactly 2,436:—Balcony, 750; area, 836; grand circle, 500; orchestra, 350. The lecture theatre will hold an additional 360. Twenty-one inches per person is allowed in the best seats, and 18 in. in the cheap seats. The total cost is about 30,000*l*.—*Halifax Guardian*.

SANITARY AND ENGINEERING NEWS.

CARDIFF WESTERN SEWER. — The Borough Engineer of Cardiff (Mr. Harpur) has prepared the estimates required by Parliament showing the cost of the works proposed to be executed by the Corporation under their Bill for powers to construct new intercepting and other sewers for the purpose of discharging sewage into the sea at or near Lavernock Point. The total estimated cost of these works is 181,000*l*., made up as follows:—Intercepting sewer, 21,190*l*.; outfall sewer from the termination of the intercepting sewer to Lavernock Point, 103,070*l*.; two connecting sewers forming connexions with the intercepting sewer, 12,570*l*.; storm overflow sewer, 1,670*l*.; pumping station, engines, pumps, and buildings, 33,000*l*.; and land and easements, 9,500*l*. To meet this expenditure, including the cost of passing the scheme through Parliament, provision is made in the Bill to enable the Corporation to borrow any sum not exceeding 186,000*l*.

MANCHESTER SHIP CANAL.—From the half-yearly Report of the Engineer to the Manchester Ship Canal (Mr. Henry Hunter), we learn that the depth of water in the canal and docks has been maintained throughout, notwithstanding that, as a consequence of the excessive rainfall experienced during the half-year, exceptionally large quantities of sludge and detritus have been carried down and deposited in the canal and docks. Above Eastham Locks two dolphins, which are required for the berthing of vessels while being ballasted, are in course of construction on the easterly side of the canal. At Partington Coal Basin additional lines of railway, together with two weighbridges, have been laid down and are in use. One leaf of the spare steel gates for the 65 ft. locks on the canal has been completed and delivered at Barton. The additional roads and railways at the timber storage ground at Weaste have been completed and are in use. In the Manchester Docks, the curve which forms the junction between Salford Quay and No. 8 Dock is being faced with timber work so as to provide additional berthage space for vessels in the dock. The erection of new offices (1) at Trafford-road and (2) at the end of No. 4 Dock, for the staff engaged in the working of the docks and railways is proceeding. Considerable additions have been made to the railway sidings at the docks; a portion of the new railways on the Trafford Park side of Trafford Wharf-road has also been completed. A commencement has been made with the operations required for the dock and railway extension and other works authorised by the Company's Act of 1900. The western portion of the through line of railway and the main road on the northerly boundary of the property recently acquired by the company are in course of construction; the permanent fence is also being erected, and the levelling of the ground for quay and storage space is in hand. The embankments and slopes of the canal generally are in good condition, and the works throughout the canal have been efficiently maintained.

AYLESBURY RURAL DISTRICT SEWERAGE.—A Local Government Board inquiry was held on Thursday, the 7th inst., at the Public Hall, Waddesdon, by Mr. F. H. Tulloch, M.Inst.C.E., one of the Inspectors of the Local Government Board, into the subject-matter of a petition presented to that board by the Aylesbury Rural District Council, to issue a provisional order to empower them to put in force, with reference to certain lands required by them for purpose of sewage disposal for the township of Waddesdon, the powers of the Land Clause Act with respect to the purchase and taking of lands otherwise than by agreement. The land in question was about three acres of glebe adjoining Quainton-road, of which the Rev. Dr. Yule, as Rector, is the life owner. Mr. Guest Luckett, engineer of Aylesbury, was present, and explained the scheme to the Inspector. On the following day a similar inquiry was held at Haddenham by the same Inspector. Mr. G. Luckett on this occasion was also present as engineer of the scheme, and explained the plans to the Inspector as on the previous day.

BOILERS FOR THE BUFFALO EXHIBITION.—The boiler plant of the Pan-American Exhibition, which is to be held at Buffalo, U.S.A., from May 1 to November 1 this year, will be stationed in a separate building across the canal to the west of the machinery and transportation buildings, the steam main being brought under the bridge to the boiler-house. The steam will be furnished by four "Climax" water-tube boilers, built by the Clonbrock Steam Boiler Company, Brooklyn, New York. These boilers will be about 13 ft. external diameter, will stand over 31 ft. high to the base of a 48 in. chimney stack, and will have a minimum evaporative capacity of 15,000 lbs. of water per hour each. They will be fired with natural gases, but will have the regular coal grates covered with fire brick, so that in case of failure of the gas supply the covering can be removed and the boiler run with coal without serious interruption to the service. The "Climax" boiler is now being built in this country by Messrs. B. R. Rowland & Co., Limited, Climax Works, Reddish, near Manchester, who are the sole manufacturers outside the United States.

SEWAGE OF RHOSLLANERCHRUGOG, DENBIGH.—Colonel A. J. Hepper, R.E., Local Government Board Inspector, held an inquiry on the 8th inst. at the Public Hall, Rhosllanerchrugog, with reference to an application made by the Wrexham Rural District Council for a loan of 2,500*l*. required for purposes of enlarging the Rhos sewage outfall. Mr. Price Evans, engineer to the Council, gave evidence in support of the scheme.

FOREIGN.

FRANCE.—There is continued talk of the formation of a new Académie des Beaux-Arts outside of the Institut. The promoters of the scheme are MM. Gérôme, Bouguereau, Bonnat, Benjamin-Constant, Mercié, Fremiet, Vaudremer, Chaplain, Cormon, and Dagnan-Bouveret. It is to number one hundred members, and is to include women, after the example of the old Académie Royale, of which Mme. Vigée-Lebrun and Mme. Rosalba were members. —— The graceful building in Boulevard des Capucines, known as the "Pavillon Hanovre," is to be demolished. —— The commemorative medal of the great Exhibition, intended for presentation to exhibitors, and which is designed by M. Chaplain, presents on the principal face a figure of Fame bearing on her wings a figure of Labour, and sailing over a panorama of the Exhibition. On the reverse is a profile head of the Republic, with a view of the city of Paris as a background.——A statue to the celebrated philanthropist, Victor Considérant, is to be erected at Salins (Jura).——The demolition of the fortifications of Abbeville has been resolved on.——The work of restoration and enlargement of the ancient cathedral of Nice has just been completed.——Parliament has decided on building new hôtels for the French Ambassadors at Vienna and at Washington.—— The statue of a Parisian lady, by M. Moreau-Vauthier, which surmounted the entrance to the great Exhibition from the Place de la Concorde, has been bought by a contractor concerned in the demolition of the buildings, who proposes to set it up in the public square of a small town in Cantal called Puy-Mary. —— The death is announced, at the age of seventy-seven, of M. Louis Fabre, a former pupil of Constant Dufeux, and who was since 1866 a member of the Société Centrale des Architectes. He had been an inspector of works under the Paris Municipality, and had carried out numerous works in the provinces and in Paris, including a number of private houses at Neuilly-sur-Seine.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—The well-known business of Mr. George Jennings, sanitary engineer, has been converted into a limited company under the style of "George Jennings, Limited," the share capital being taken up by members of the family or friends.

GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—The usual meeting of this Society was held on the 8th inst., Mr. Alex. Davie presiding. The subject for the consideration of the members was "Wall Coverings," three lecturers reading papers thereon. Mr. Colin Sinclair, honorary secretary, treated the subject of "Limes" and their application to wall surface, drawing special attention to the successful use of hydraulic lime plaster, as perfected by Mr. Alex. McAra, Glasgow, by his process in the preparation of Arden lime for this purpose. Mr. Robert W. Horn, A.R.I.B.A., confined his remarks to the use of "Cements" as plasters, and made clear in an interesting manner the various uses of "Petrifite" in its numerous functions. In the third branch of the subject, Mr. David Jackson, modeller, lectured on "Patent Plasters," speaking of such forms as Keene's, Robinson's, and Parian cements, adamant, &c., and gave some useful information with regard to "Fibre" plaster and the casting of such, with special reference to its use in the Glasgow International Exhibition.

"THE LONDON MANUAL."—"The London Manual for 1901" (the fifth year of publication) contains much interesting and useful information concerning public bodies such as the London County Council, City Corporation, Boards of Guardians, Metropolitan Asylums Board, and the School Board. The work of the new Borough Councils is also described. The Manual, which is published by Edward Lloyd, Limited, Salisbury-square, appears to contain everything that is looked for in such a work. There are several small illustrations and maps in the issue.

ARBITRATION CASES.—At the Surveyors' Institution, Westminster, on the 6th inst., Mr. J. H. Clutton, arbitrator, concluded his inquiry as to the compensation to be paid by the London County Council for the property at Albert-square, on the south side of Commercial-road, E., which they had acquired as an open space under their General Powers Act of 1890. At the previous meeting evidence was taken from which it appeared that in 1899 the claimant, Mr. Morris Cohen, a mantle manufacturer, purchased the property at Albert-square, consisting of thirty-nine houses and the open square, for the sum of 22,000*l*., or 1,000*l*. more than was paid by the previous purchaser. Mr. Cohen, on obtaining possession of the property, proceeded to build workshops in the rear of the houses, and, as the demand for such premises was brisk at the East End, got an extra rental of 20*l*. per annum for each house. He was about to erect houses with workshops and shops on the square when the County Council obtained their compulsory powers. The claimant had been offered 37,500*l*. for his property, but had declined the offer in view of its development. The value of the vacant land at Albert-square as a building estate was variously estimated by his witnesses—Mr. Hasluck, architect, Mr. E. J. Bousfield, surveyor, Mr. Douglas Young, surveyor, Mr. H. J. Bliss, surveyor, and Mr. C. H. Moore, surveyor—at from 16,500*l*. to 17,187*l*. The case of the County Council was opened by Mr. English Harrison, who contended that the valuations of the claimant's witnesses were greatly exaggerated. He called Mr. S. Walker, surveyor, whose estimate was 7,603*l*; Mr. Farmer, surveyor (of Messrs. Debenham, Tewson, & Co.), whose estimate was 8,250*l*. at the rate of 5*s*. per foot; Mr. Collins, surveyor, whose valuation was 7,920*l*; and Mr. J. M. Knight, surveyor, who valued the open space at 7,497*l*. The arbitrator, at the close of the proceedings, reserved his decision.—On the 31st ult., at the Surveyors' Institution, Mr. Ralph Clutton sat as arbitrator in the case of "Lord Guildford *v.* War Office," a claim in respect of the compulsory acquisition by the War Department of 247 acres of freehold land

for military purposes. It was stated that the land in question formed part of Lord Guildford's estate, and was situated in the parishes of East Langdon, Guston, and St. Margaret's-at-Cliffe, and within easy distance of Dover. Evidence on behalf of Lord Guildford was given by Mr. Alex. R. Stenning, F.R.I.B.A., Mr. George James Brown, F.S.I., and Mr. W. J. Jennings, F.S.I. For the War Office evidence was given by Sir William Crundall, Sir J. Whittaker Ellis, Bart., F.S.I., Mr. R. F. Granville, Mr. Cobb, F.S.I., and Mr. James Green, F.S.I. The owner's contention was that the land was of value as a possible building estate, an assertion which was denied by the War Office.

STREET IMPROVEMENTS, MAIDENHEAD.—Colonel W. Langton Coke recently held an inquiry on behalf of the Local Government Board in respect of the application of the Maidenhead Corporation for sanction for a loan of 9,000*l.* for street improvements. The Borough Surveyor (Mr. Percy Johns) gave evidence in support of the application. After several objections had been heard, the Inspector visited the various streets and localities proposed to be dealt with.

WIDENING OF HAMPSTEAD-ROAD.—A local committee held a public meeting, on the 11th inst., at Tolmer's-square Institute, Drummond-street, to consider the danger arising from the narrowness of Hampstead-road at the Euston-road. Dr. Collins, L.C.C., who presided, said the width of Hampstead-road at its southern outlet was only 33 ft. According to recent police returns, no fewer than 33,941 vehicles passed this spot between 8 a.m. and 12 midnight on a given date. The three lines of tramcars deposited thousands of passengers at that spot daily, and the danger was increased by the changing of horses. The question was affecting the welfare of London in general, and St. Pancras and North London in particular. —The Mayor of St. Pancras moved a resolution declaring that the great and continuous increase of traffic rendered imperative the widening of the south end of Hampstead-road. Of the 33 ft. of the thoroughfare, 12ft. 6in. were, he said, appropriated by tramcars, on either side of which omnibuses usually pulled up. The resolution, which was seconded by Mr. W. R. Cremer, M.P., and supported by Lord Elcho and Mr. Westacott, L.C.C., was adopted, with one dissentient. It was further resolved to bring the matter before the London County Council and the St. Pancras Borough Council, and to ascertain from London County Council candidates their views upon the subject.

THE PROPOSED RESTORATION OF LINLITHGOW PALACE.—Mr. Ross, of the firm of Messrs. M'Gibbon & Ross, architects, Edinburgh, who has had a life-long practical acquaintance with Linlithgow Palace, is of opinion that it could be restored in keeping with the other parts of the building at a cost of, say, about 40,000*l.* He suggests that it should be converted into a great national institution, such as a museum or a library. "I have before now," he says, "urged the advisability of restoring Linlithgow Palace, and that for many reasons. First of all, that it is not in such a desperate state of ruin but what it could be easily restored to its original condition. Nothing else would preserve it but to place a roof upon it. As history records, in 1746 it was set fire to by Hawley's Dragoons, who were quartered in the Palace after the battle of Falkirk of that date. Up till then the Palace was in constant occupation. As the birthplace of Queen Mary, there is undoubtedly great appropriateness in the suggestion for its restoration as a memorial of a still greater Queen, and of a Queen about whose history there can be no cavil or dispute. Of course, the building, when restored, would not be suitable, owing to its situation, as a Royal residence, but still it could be used as an institution of the kind already suggested. Being situated mid-way between Edinburgh and Glasgow, there could be no rivalry between the two cities as to which city it belonged, and consequently, the rivalry being eliminated, it might become a very favourite Scottish institution. Some of the large apartments, especially the great hall, erroneously termed the Parliament Hall, would be one of the most magnificent rooms in Scotland. The Domestic Chapel is also a place of singular interest. It is by far and away the finest of the kind in Scotland. In fact, the Palace might be made a place to illustrate the mediæval history of Scotland."—*Dundee Advertiser.*

BRITISH FIRE PREVENTION COMMITTEE.—At the monthly meeting of the executive of the British Fire Prevention Committee the decease of her Majesty the late Queen was referred to in fitting terms, and it was proposed by Mr. Edwin O. Sachs (chairman of the executive) and seconded by Mr. F. R. Farrow (chairman of the commercial section) and unanimously carried, that, "The executive of the British Fire Prevention Committee representing some 500 architects, engineers, municipal officers, and others professionally interested in fire protection and research desire to offer their sincere condolences to his Majesty the King on the great sorrow sustained in the death of their late beloved Sovereign, Queen Victoria. The executive further desire respectfully to assure his Majesty of their unswerving loyalty and devotion to the Throne."

MUNICIPAL HOUSE BUILDING IN SHEFFIELD.—The following item appears on the minutes of the Health Committee of the Sheffield Corporation:—The City Surveyor reported that ten of the cottages in Hands-lane were ready for occupation, and that five more would be ready in a few days. He also reported that the cost of cottages, including land, erection, street works, and incidental expenses, would be approximately as follows:—

	Estimate. £ s. d.	Approximate total cost. £ s. d.
Land		714 12 0
Contract work	1,856 15 4	
Increased (through contractors having declined to carry out tenders) to	2,020 14 6	2,020 14 6
Building work, &c., done by Highway Department	2,760 0 0	2,751 5 7
Printing, clerk of works' wages, street works, &c.		306 18 2
		£5,793 10 3

Resolved, that the Tramways Committee be requested to lend to the Health Committee a sum of 800*l.*, the amount required, in addition to the 5,000*l.* already lent by them, for the cost of the erection of the Hands-lane cottages, on the same terms as to interest and period for repayment as the 5,000*l.*

THE SANITARY INSPECTORS' ASSOCIATION.—In consequence of further unavoidable circumstances, the annual dinner of this Association has been postponed to March 15. It will be held at the Venetian Chamber, Holborn Restaurant.

CAPITAL AND LABOUR.

THE NORTHERN BUILDING TRADE DISPUTE.—The Northern Centre of the National Federation of Building Trades Employers and the London Order of Operative Bricklayers have agreed to submit the matters in dispute at several of the centres of the industry to arbitration. An agreement to this effect has been made as follows:—"Memorandum of an agreement made between the Executive Council of the Northern Centre of the National Federation of Building Trades Employers of Great Britain and Ireland and the Executive Council of the London Order of Operative Bricklayers for the settlement of the strike and lock-out of operative bricklayers in Newcastle-on-Tyne, Gateshead, and district and the Northern Counties Federation district. It is hereby agreed that the dispute between the employers and operative bricklayers at Newcastle-on-Tyne, Gateshead, and district shall be submitted to the arbitration of two gentlemen, one each of which shall be appointed by the respective parties hereto, and in the event of the two gentlemen nominated being unable to come to an agreement they shall have power to appoint a referee, whose decision shall be final and binding on both parties; and it is hereby further agreed that in the event of the two arbitrators being unable to agree upon a referee the President of the Board of Trade shall be respectfully asked to nominate one at the request of both parties to this agreement. The arbitrators' award to be given within a fortnight of the date of signing this agreement, or at such subsequent early date as they, the arbitrators, may fix. It is further agreed that all the union operative bricklayers shall return to work in all the northern towns affected immediately the arbitrators' award is given, those in Newcastle-on-Tyne, Gateshead, and district on the terms of the award, and those in the other towns affected on the rules and rates of wages in force prior to the lock-out." Since the signing of the agreement by the chairman and secretary of the respective parties it has been practically arranged that one arbitrator shall be accepted, to be nominated by the President of the Board of Trade at the request of both parties.

SHEFFIELD CORPORATION AND THE PLUMBERS DISPUTE.—The Sheffield Corporation Water Department are going to pay the plumbers in their employ the 9½d. per hour asked for, on the condition that they accept the new proposals in regard to walking time and winter hours. Originally the men demanded 9½d. per hour—an increase of ½d.—without any conditions, but later the employers suggested certain new rules, the most important of which were that within a radius of 1½ miles of the parish church, or 2 miles of the workshop, no walking time should be allowed, and that the rule fixing 49½ hours as the working week throughout the year should be so varied that during the four winter months it should be 47 hours.—*Sheffield Telegraph.*

PERTH JOINERS' WAGES.—Perth operative joiners have received notice from the masters that on and after April 1 the wages will be reduced from 8½d. to 7½d. per hour.

THE DUNDEE BUILDING TRADE.—A conference took place on the 8th inst. in Dundee between the Master Builders' Association and the Operatives' Association regarding a proposed reduction of wages. The men's wages at present are 8½d. per hour, and both committees recommended a reduction of ½d. per hour, commencing on February 16, with no further change till the end of May, when a new agreement could be considered.

PENRHYN QUARRIES.—Negotiations are being carried on between the managers and the men, but we do not think it probable that the latter will resume work.

LEGAL.

BUILDING DISPUTE AT SOUTH SHIELDS.

THE case of the Mayor and Corporation of South Shields *v.* Wilson Brothers came before a Divisional Court of King's Bench, composed of Justices Wills and Channell, on the 7th inst., on appeal from a decision of the Justices of South Shields, who decided in favour of the defendants.

Mr. Ralph Bankes appeared for the appellants, the Mayor and Corporation of South Shields; the defendants were not represented.

The case came before the Court in the form of a special case stated, from which it appeared that a complaint had been brought before the Justices on behalf of the Mayor and Corporation of South Shields against Messrs. Wilson Brothers, that they had unlawfully erected a "new building" in Redhead-street in the borough without having first given fourteen days' notice in writing to the Corporation, and not having delivered to their surveyor plans thereof, contrary to the by-laws of the borough. Upon the hearing of the complaint the following facts were either proved or admitted by both parties: The defendants were the owners of a piece of ground of about an acre in extent in Redhead-street. It was boarded on every side, and occupied in part by a veterinary surgeon, who had an office, a stable, and some other wooden erections for his business. The defendants also occupied other parts of the ground as a builder's yard, and near the centre of the ground the defendants had an open shed. Against this shed the defendants put up the wooden erection complained of. It was of no great size, being under 20 ft. each way, and at the apex of the slanting roof only 12 ft. high. The public had no access to it, and it was to all intents and purposes in the enclosed private ground of the defendants, and was intended for a stable. On the part of the complainants it was contended that the wooden erection complained of required plans to have been delivered to the Corporation, which had to be approved of by the Corporation before the defendants commenced to build, and this the defendants had not done. The defendants' contention was that it had never been the custom of the Corporation to require any plans for wooden-built stables to be submitted to them; that the by-laws had not been insisted upon in such a case previously; and further that the by-laws did not apply to such a case as the present. The Justices, before deciding the case, surveyed the erection and its surroundings, when they held that the by-laws did not apply to a stable built of wood upon enclosed ground, as in the present case. In the opinion of the Justices, "a building to be a building within the meaning of the by-laws should answer to the description of an edifice having some approach to architectural design and structurally fit and intended for use and occupation by humanity in a civilised form." They therefore held that the structure in question was not a "building" within the meaning of the by-laws, and that no question of law arose in the case.

At the conclusion of the argument of counsel, their lordships held that the structure in question did come within the meaning of the by-laws, and remitted the case to the Justices, directing them to convict the defendants.

The appeal was accordingly allowed.

CENTRAL LONDON RAILWAY AND SUBSIDENCES.

THE case of the Trustees of Mrs. M. Cunliffe *v.* the Central London Railway came again before Mr. J. W. Penfold, F.R.I.B.A., sitting as sole arbitrator, at the Surveyors' Institution on the 8th inst. The case is one in which damages to the extent of 4,800*l.* are claimed against the Central London Railway for alleged damage to No. 2, Lancaster Gate, Bayswater-road, caused by subsidence of the soil consequent upon the construction of the railways.—Mr. A. G. Manton, C.E., chief agent to the contractor, in giving evidence on behalf of the company, said it was his opinion that the subsidence was due to the bursting of a water main belonging to the East London Water Company. It was quite impossible that the railway could have had anything to do with it. The house was built upon a layer of mud, and any considerable stream of water, such as would result from the bursting of a large water-pipe, would certainly tend to shift the foundations and ultimately to cause the cracks complained of.—Sir Douglas Fox also gave evidence for the railway company. He said the method of the construction of the tunnel of the Central London and similar railways was such as to preclude all possibility of overhead subsidence. After the Greathead shield had cut its way, and the iron lining plates fixed in position, the inch and a half of space remaining between the plates and the soil of the tunnel was immediately filled with a clayey composition injected through the plates, so that the whole was as firm and compact as before. Subsidence was in that way rendered impossible. He had watched the construction of the railway for the Mercers' Hall and the Royal Exchange, and he had found out that any subsidences that occurred invariably took place some time before the spot was reached by the work-

men, and that no movement occurred subsequently. Even then the cracks were only "hair cracks." He concluded that for the tunnel to have affected the house the damage must have been done in the autumn of 1897, whereas it did not take place till much later. As the house was built upon the valley of a once-existing brook, the ground, if it became saturated by water from a burst water-main, would certainly give way and cause cracks in the houses above. Another reason which made him believe that the tube had not affected the house was that a 6-ft. sewer which ran between the house and the railway was quite intact. The construction of vertical shafts for stations very often caused subsidences in the adjacent buildings, but as No. 2, Lancaster Gate was 440 ft. from a station, this cause was extremely unlikely.

Mr. J. Seaton, the resident engineer, gave corroborative evidence, and the case was adjourned provisionally until March 1.

ACTION BY A SCENIC ARTIST.

THE case of Ryan *v.* the Portsmouth Theatre, Limited, came before Mr. Justice Bigham, sitting without a jury, in the King's Bench Division on the 11th inst. It was an action brought by the plaintiff, Mr. Thomas Edward Ryan, a scenic artist, to recover from the defendants 73*l.* 11s. 1d., his fees for an act drop representing the ship *Victory* being towed into port, and which he alleged was executed by him to the order of the defendants' managing director.

It appeared that the price agreed on for the act drop was 50*l.*, and that the plaintiff made a sketch which was submitted to Mr. Matcham, the defendants' architect. The plaintiff, to complete the work, obtained the assistance of Mr. T. T. White, who painted the figures at a cost of 20*l.*, which the plaintiff paid. The act drop had been used at the defendants' theatre from August 6 down to the present time, but defendants refused to pay the full price for it on the grounds that it was not according to the instructions given by their architect, and that the architect had not given a certificate for the work. The defendants paid 58*l.* 11s. 1d. into Court as being sufficient to satisfy the plaintiff's claim.

For the defence, Mr. F. Matcham, defendants' architect, in giving evidence said he told the plaintiff he wanted three or four fairy-like figures, with wreaths of roses and other flowers, attached to the bow of the ship *Victory*, towing the ship into port. He wanted Britannia at the side, drawing the drapery back and disclosing the picture. The plaintiff said it was a good idea. The plaintiff did not say it could not be done. He did not approve of either of the sketches, neither did he approve of the "act drop," and suggested alterations—namely, other figures to be added. The plaintiff intimated that he would do that and do his best to make it comply with his wishes. He did not think that the act drop as executed carried out his ideas, and he refused to certify that it was done to his satisfaction.

In the result judgment was entered for the plaintiff for 15*l.* beyond the amount paid into court, with costs

Mr. Stephen Lynch appeared for the plaintiff, and Mr. Emanuel for the defendants.

BREACH OF CONTRACT.

[NORTHERN CIRCUIT.]

MESSRS. NEILL & SONS, builders, of Manchester, brought an action recently to recover damages for breach of contract from Mr. Hamor Lockwood, a contractor. Mr. C. A. Russell, K.C., and Mr. Gilbert Jordan appeared for the plaintiffs; and Mr. Pickford, K.C., and Mr. Langdon for the defendant. A watching brief for an insurance company was held by Mr. Acton. From the statements of counsel it appeared that the plaintiffs, who were builders in Manchester, entered into a contract with the Lancashire and Yorkshire Railway Company for the construction of certain works, and relet a portion of the asphalt work to the defendant, a contractor in Manchester, under a sub-contract. In the specifications and conditions attached to the sub-contract there was a clause stipulating that the defendant should include in his tender insurance of the workmen employed by him, there being a condition that the plaintiffs were not to be responsible for any accident which might befall any of the defendant's workmen. During the execution of the work an employee of the defendant's was injured and died. A claim was made by his widow under the Workmen's Compensation Act, 1897, and both the plaintiffs and defendant were made parties to the action, which came before Judge Parry, of the Manchester County Court, sitting as arbitrator. Judge Parry, following a decision of the Court of Appeal, which laid down that a sub-contractor was not an "undertaker" within the Act, awarded the widow 234*l.* damages against the present plaintiffs and dismissed the case as against the present defendant. The plaintiffs now sought to recover that sum, together with 31*l.*, the costs of the arbitration, from the defendant. Mr. Russell argued on behalf of the plaintiffs that the defendant was bound to indemnify them against any claim for damages for injuries sustained by the defendant's workmen. For the defence it was submitted that the defendant, in taking out a policy of insurance, had fulfilled his obligations under the clause in question, and that there was no contract to indemnify the plaintiffs against damages in any action that might be brought against them. In the course of his judgment the learned Judge said that he was of opinion that the clause in question was inserted for the protection of the plaintiffs with the object of throwing upon the defendant the obligation to discharge any claims which might be brought against the plaintiffs by any of the defendant's workmen. He thought that the intention of the clause was that the defendant was to take out a policy under which the insurance company would be responsible for any claim brought against either the plaintiffs or the defendant by the defendant's workmen. Such intention was, he considered, sufficiently shown by the words in the contract, "it being a condition that we are not responsible for any accident occurring to your workmen." The meaning of this clause was clearly that the defendant should take such steps as would prevent any liability falling upon the plaintiffs in respect of any accident happening to the defendant's workmen. There would be judgment for the plaintiffs for the amount claimed, with costs. A stay of execution was applied for by Mr. Pickford, and granted.—*Times.*

BUILDING CONTRACT: ARCHITECT'S CERTIFICATE: NOTICE TO TREAT.

IN the Official Referee's Court, on the 6th inst., before Mr. Verey, the case of Lole and Lightfoot *v.* Vidal was heard. This was an action brought by the plaintiffs, a firm of builders at Chelsea, to recover 485*l.* 10s., and loss of profit on a building contract, and raising the question of whether architects' certificates should be issued after a notice to treat had been served on the owner.

Mr. Morton Smith appeared for the plaintiffs; the defendant, who conducted his own case, had paid 260*l.* into Court.

Mr. Morton Smith said that in the latter part of 1899 negotiations took place between the plaintiffs and defendant as to rebuilding No. 51, Shaftesbury-avenue, and other premises in Wardour-street. The defendant ultimately accepted the plaintiffs' tender of 610*l.* for the work, but afterwards altered his view as to what was required to be done, and on March 22, 1900, the parties entered into another contract for 872*l.*, including an addenda which contained priced items commencing with the 610*l.* The contract contained clauses stipulating that when, in the opinion of the defendant's architect, work to the value of 200*l.* was done, the contractor should be entitled to be paid at the rate of 85 per cent., that the defendant's architect should give certificates from time to time, and that after a stoppage for a month the contract could be determined. On April 2 the architect, Mr. J. A. Souttar, authorised the builders to proceed, and they pulled down and cleared away the wall next Wardour-street, the defendant agreeing to pay 50*l.* for it, as the architect thought the work necessary. On April 17 both the architect and the defendant wrote to the builders directing the work to be stopped, as a notice to treat had been served on the owner (the defendant) by the Strand Board of Works, the land being required for widening the street. In consequence the builders stopped at once, but the plant and materials were left on the site for about six weeks. On May 3 the builders applied for payment of 485*l.* 12s., being the account rendered for work executed up to the date of the stoppage of the work. The works having been stopped one month and no further orders to proceed given, the contract was determined. On May 24 the defendant's solicitors wrote informing them that items in their claim were not covered by the architect's certificate, and mentioning the compensation claim against the Strand Board of Works. The builders replied that the compensation claim had nothing to do with them, and required payment by the architect's certificate. On June 25 the architect made out a certificate for 250*l.* (including 50*l.* for the wall), and again, on July 20, gave a final certificate for 100*l.*, intimating also that any claim for loss of profit by non-completion of the contract was not within his province. The defendant declined to pay for loss of profit; and thereupon the plaintiffs brought this action. The job was an awkward one to do, as the land was only 8 ft. in depth and 48 ft. in length, and therefore, in estimating for work of this kind, a builder would look for a larger profit than he would in other work, because of the extraordinary amount of risk and difficulty which he would have, and the plaintiffs had put this profit at 15 per cent. on 572*l.*, or 85*l.* 10s. In the certificates of 350*l.* was included the 50*l.* authorised by the defendant for the party wall.—Mr. Wm. Chas. Lole, a member of the plaintiff firm, bore out the counsel's opening statement, and said the minimum profit would be 15 per cent.—Mr. Henry F. Williams, surveyor, Fleet-street, E.C., agreed that 15 per cent. was a reasonable profit for a builder to expect for work of this character.—Mr. J. A. Souttar, architect, Bishopsgate-street Within, said he was employed in the matter by Mr. Vidal, and exercised his judgment on the amount of work actually done. He obtained the schedule of prices from the builders as to how they arrived at the 610*l.* He arrived at the opinion that 350*l.* was a fair contract price for the work done, leaving 57*l.* for work under the contract not carried out. A builder would expect 15 per cent. profit on an awkward job like that. The building was up to the ground floor.—The Official Referee said the certificates were binding upon him, unless fraud and dishonesty were proved.—Other evidence having been given, the Official Referee held that the clause stipulating that the builders could not claim loss of profit if they determined the contract did not apply. He gave judgment for the amount certified by the architect, 350*l.*, and for loss of profit at 12½ per cent., 71*l.* 15s., with costs.—*Estates Gazette.*

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

20,432.—AUTOMATICAL WATER SUPPLY FOR WATER-CLOSETS: *R. C. Grundy, D. F. Grundy, and D. Grundy.*—For supplying water in fixed quantities; the valve casing into which the supply pipe enters has an inlet and a discharge valve worked by a weighted lever that is raised or lowered by the seat of the closet, and is joined to the spindle of the outlet valve; water will flow through a pipe into a container when the inlet valve is lifted through the engagement of its spindle with the extended spindle of the outlet valve as the latter is pressed against its seating; water flows into the closet upon the opening of the outlet valve, which depresses and shuts the inlet valve; the latter valve is disposed adjustably upon its spindle, and its conical shape is intended to obviate the deposit of dust and dirt; escape of air is provided for by means of an adjustable float-valve fitted upon the container, which also has a funnel-shaped opening for the prevention of noise at the discharge; air is admitted through a spring or weight-balanced valve at the top of the container.

20,435.—LINING-PLATES FOR BRICK MOULDS: *J. E. Brindley and F. Rowley.*—The lining-plates are made of some such hard substance as porcelain, stone, steel, or glass, and are fastened to one another in their places around the die or plunger so as to form a frame to be placed within a flanged casing made of cast-iron, to which they are cemented, the cement interlocking with projections and recesses fashioned upon the lining-plates.

20,447.—A CONTRIVANCE FOR USE WITH LATCHES AND LOCKS: *D Beards.*—The cap or back-plate is secured to the body of a lock or latch-case by lugs upon the plate, which will pass through holes cut in the fore-end; at the back of the case is another lug, which is clinched over after it has been inserted through a hole at the edge of the plate; if the fore-end does not cross the edge of the door, its lug or lugs can be passed through a hole or holes in the plate, and the plate-lugs will then pass into holes made in the back of the case; in another form the lugs and holes are set on opposite sides, instead of at the ends, of the plate.

20,469.—SHEET-ROOFING: *C. H. Windle and B. D. Meares.*—Hooks or clips that are bolted on to the purlins are employed for fastening corrugated metal roofing sheets in their position, the upper edge of each sheet being placed between the hook and the purlin, and the lower overlapping edge of the sheet immediately above being inserted underneath a round prong which extends from the hook.

20,470.—SIPHONICAL DISCHARGE: *C. D. Martin.*—The flush is started through the forcing down of water over the crown of the siphon by means of the fall of a piston within a cylinder that is fitted in the top of a flattened receiver, at the bottom of which is a non-return valve, and into the top of which the shorter leg of the siphon is introduced. A silent discharge and the collection of dirt between the cylinder and its piston are prevented by means of a ring around the top of the cylinder.

20,486.—ELECTRICAL SWITCHES AND CUT-OUTS: *A. Faray.*—Metal bushings are sunk below the surface of each distribution board in two rows of holes and in such a manner that they cannot be touched by the hand; wires that fit in deep grooves cut in insulating handles and connecting the plug terminals constitute the simple fuses; for the switches the fuse is connected to one of the plugs and to one of the contacts, the other plug being connected to the other contact.

20,489.—BRICKS AND BLOCKS FOR BUILDERS USE: *S. Ritter von Bielinski.*—The bricks and blocks, moulded in various suitable shapes, are intended for floors, ceilings, arches, walls, conduits, paving, foundations, and so on; they are hollow and are to be joined together with their interlocking grooves and tongues and hollow or solid cores that will pass into two or more bricks. The bricks should be vitrified or baked into clinkers when they are required for the building of vaults and floors, and the passages through them will serve for the drainage of water, the circulation of air, and the conveyance of smoke.

20,492.—PERCUSSIVE ROCK-DRILLS: *R. Avery and H. C. Campbell.*—A clamp between adjustable collars forms the mounting upon a standard of the casing in which the drill that is to be struck with hammers is held and turned, the drill passes through split bushes in the ends of the casing, which consists of two parts screwed together, and it is gripped between pawls pivoted upon a sleeve by means

of a spring, whilst another pawl, carried on a ring, operates a sleeve upon which are sliding lugs that turn the former sleeve in order to turn the drill; the drill can be raised clear of the end of the hole when it is turned by means of ratchet teeth on the latter sleeve that engage with teeth upon a plate so as to force the plate backwards upon the pivoted pawls and make them hold and raise the drill.

20,506. — CLIP-AND-SLEEVE AND BUTT-AND-FLANGE JOINTS FOR PIPES: *D. M. Nesbit.*—The couplings or joints are intended for metal tubes and pipes which have tapered ends for collars and rings, the joints being tightened by the bolting together of other collars. A projecting lip or ring upon one collar will engage with a groove in the opposite collar and so secure the jointing washer. The tube-ends may be expanded or riveted over so as to fit into recesses made in the faces of the collars, or the collars may be screwed. By another method of coupling, a loose collar or ringed flange, which is fashioned with an interrupted boss, will fit with an interrupted collar or shoulder upon the end of the pipe.

20,518.—AN ARTIFICIAL MARBLE: *S. Weill.*—A paste is made by stirring together water, glycerine, and white English marble cement, to which is added an earthy colouring substance mixed with water and glycerine. The moulded blocks are smoothened with pumice-stone, and then, having been dried again, are smoothened with whetstone, stopped, and smoothened with a polishing stone. They are next soaked in olive oil and wax polished. For a hard one-tinted marble an admixture of cinder dust, white English marble cement, glycerine, water, and colouring matter should be used.

20,557.—AN APPLIANCE FOR DISC MILLS FOR GRINDING LIME, ASHES, SANDSTONE, &C.: *F. E. Whitham.*—The grinding mills are provided with a balancing contrivance that consists of two, or three, rings, which have a channel-shaped section and are placed adjustably around the pan of the runner, or, it may be, upon the stone, lime, &c.; wooden packing rings effect the vertical adjustment of the balancing rings, which are made solid throughout their greater part in each instance.

20,585.—A LOWERING APPARATUS FOR ESCAPE FROM FIRE: *J. E. Young.*—The apparatus, which has a liquid brake, comprises a drum or reel that is mounted within a window frame or a similar fitting, and is made in two portions upon which the ropes are wound in contrary directions in order that one rope shall be wound up as a person is lowered by the other and unwinding rope; within the drum is a piston which a fixed and screwed axis impels through the cylinder. A projection which fits in a groove prevents the piston from turning, whilst the descent is regulated by the forcing of the liquid through an orifice in the piston so as to set up the action of a cushion or brake.

20,592.—AN APPARATUS FOR HYDRAULIC RAMS: *J. McC. Kline and S. A. Wetzel.*—A spring, which has a thickened foot for its adjustment and attachment to a lug upon the valve seating, carries the waste valve, the spring carrying the valve adjustably with nuts. A similar support is contrived for the air chamber valve, of which the spring crosses the valve seating, and is mounted upon lugs at the sides. For an increase of the delivery pressure a tapering outlet joins the air chamber and the discharge pipe.

20,606.—A TRAVELLING CRANE: *H. A. L. Barry.*—Overhead rails support the carriage, and of the two working ropes, which are guided by pulleys, some of which are placed obliquely, one is secured to the carriage and the other is passed through the fall-block and so to the carriage; on the end of the axle of the sheave in the fall-block is affixed a two-armed cam; after the loaded skip has reached the place where it is to be unloaded, a reversal of the engine makes the cam strike against a pawl upon a lever that is joined to the firing-line of the skip, thus the lever is lifted to work the firing-line for tipping the skip. In order that the two drums shall be driven in one direction when the clutch is in action, and that when the clutch is out of action one drum may be stopped and locked whilst the other drum continues its work, the drums revolve loosely upon the driving shaft, and on the shaft are two discs, on both sides of each disc are eccentrical pinions for engagement respectively with a fixed gear-wheel and a gear-wheel upon the end of the drum.

20,655.—THE MOULDING OF THE ENDS OF DRAIN PIPES AND CONDUITS: *Albion Clay Co. and R. Lawton.*—For moulding spigot and socket ends, a core is dropped upon guide-rods into the middle of the socket and the spigot end of the conduit is put into a mould that is mounted upon a base-plate, a spigot and a socket are then made in alignment with one another by means of a filling of cement, or some bituminous compound, between the pipe-ends and the mould and core; spring arms attached to the cross-head and an adjustable bar which is clamped to brackets upon the cross-head hold the socket end of the conduit in its place; a screw or lever may be used for lifting and lowering the core, which may be balanced with a weight and cord. The conduits are after the kind specified in No. 6,024 of 1898.

20,681.—AN APPLIANCE FOR USE WITH FLUSHING APPARATUS: *J. H. Williams.*—The appliance consists of a vessel or receiver, which has a funnel inlet with a siphon for its outlet, and is to be filled with a disinfectant, or some similar material, before it is placed within a flushing or other kind of cistern. Every time a flush is made the receiver will be discharged to the level of its siphon outlet.

20,723.—BOLTS FOR DOORS, &c.: *W. Doyle.*—An arm extends at a right angle from the end of the bolt and then bends parallel to the bolt again so as to have a turned-up part at its end, the bolt will both slide and turn in a casing, and will engage with a keeper, as well as in an additional keeper when it is turned upwards. The door is to be partly opened by drawing the bolt backwards as far as its turned-up end will allow, whilst the arm slides upwards inside of the keeper.

20,759.—TREATMENT OF SEWAGE: *T. J. Barnard.*—After the sewage has been caused to pass through a series of filter beds containing carbon in various forms it is directed to a filter bed of lime, and thence through settling-tanks to another range of filtering beds containing sand, and carbon consisting of coal slack, coke, or coke breeze, and charcoal, which, after it has been mixed with the separated solids and with coal tar, will serve for fuel.

20,796.—AN APPLIANCE FOR SLIDING SHUTTERS AND SASHES: *G. Barnes.*—Spiral balancing springs are wound up, when the sashes are lowered, by means of twisted square rods or screws that operate as archimedean twist-drills, and are worked by nuts secured to the sashes. The upper square end of each rod engages in a squared socket of the spring axle, and its lower end travels in a detachable split guide or bearing, the spring is prevented from running down at the withdrawal of the rod and bearing plates by means of a ratchet and pawl upon the spring axle. Portions of the frame are hinged in order that one may turn the sashes inwards upon the rods, and the sash can be held in any position desired through the engagement of a cranked swivelling fork or catch with one of the square rods.

20,803.—ENERGY METERS (ELECTRICAL): *Elihu Thomson.*—For alternating currents the induction motor meter is composed of stationary main current and pressure coils that produce separate magnetical fields, wherein two armatures are geared to one spindle and rotate together. Each of the interconnected armatures consists of a core, around which are coils, each of which upon one armature is permanently connected in a closed circuit with a coil upon the other. Each pair of interconnected coils may lie in one plane, one set of field coils being put at a suitable angle with the other, or if all the field coils are parallel to one another, the coils upon one armature are displaced about the spindle extending from the connected coils upon the other armature. If each armature carries two coils, the displacement amounts to 45 deg., and to 60 deg. if each armature carries three coils.

MEETINGS.

FRIDAY, FEBRUARY 15.

Architectural Association.—Mr. E. S. Prior on "Gothic Architecture and the Basis of its Beauty." 7.30 p.m.

Royal Institution.—Professor J. J. Thomson M.A., on "The Existence of Bodies Smaller than Atoms." 9 p.m.

Institution of Mechanical Engineers.—Mr. J. Ashford on "Light Lathes and Screw Machines." 8 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Dr. J. Priestley, M.D., on "Sanitary Law," III. 7 p.m.

Architectural Association of Ireland (*Technical Demonstrations*).—Mr. J. Early on "Glass Manufacture." 4.30 p.m. (at 1, Upper Camden-street).

SATURDAY, FEBRUARY 16.

Architectural Association.—First spring visit, to the Roman Catholic Cathedral and Cardinal's House, Ashley Gardens, Victoria-street, Westminster, by permission of the architect, Mr. J. F. Bentley.

MONDAY, FEBRUARY 18.

Royal Institute of British Architects (*Business and Ordinary*).—(1) To read the address presented by the Council to his Majesty the King on behalf of the Royal Institute. (2) To make an announcement concerning the Royal Gold Medal for the year. (3) Election of candidates for membership. (4) Mr. G. T. Hine on "Asylums and Asylum Planning." 8 p.m.

London Institution.—Mr. Arnold Mitchell on "Mediæval Sculpture." Illustrated. 5 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Dr. J. Priestley, M.D., on "Duties of a Sanitary Inspector: Outdoor." 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. H. C. Corlette on "The Planning and Design of Churches." 6.30 p.m.

Liverpool Architectural Society.—To consider further the draft memorandum and Articles of Association in connexion with the proposed incorporation of the Society. 6 p.m.

TUESDAY, FEBRUARY 19.

Institution of Civil Engineers.—Paper to be discussed: "The Nilgiri Mountain-Railway," by Mr. W. J. Weightman. 8 p.m.

Royal Institution.—Professor J. A. Ewing, M.A. F.R.S., on "Practical Mechanics (experimentally treated): First Principles and Modern Illustrations." VI. 3 p.m.

Architectural Association of Ireland.—Mr. G. Coffey on "Optical Refinements in Classic and Mediæval Architecture." Lantern Views. 7.45 p.m.

WEDNESDAY, FEBRUARY 20.

British Archæological Association.—Mr. W. Ferguson Irvine on "Some Old Halls in Wirral." With limelight illustrations. 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Institution of Junior Engineers.—Mr. A. H. Barker, B.A., on "Works Management." II. 8 p.m.

Sanitary Institute (*Lectures and Demonstrations for Sanitary Officers*).—(1) Inspection in the district of St. George's, Hanover-square. 2 p.m. (2) Dr. J. Priestley, M.D., on "Duties of a Sanitary Inspector: Indoor." 8 p.m.

THURSDAY, FEBRUARY 21.

Carpenters' Hall, London Wall (*Free lectures on matters connected with building*).—Mr. H. Heathcote Statham on "Architecture at the Paris Exhibition." 8 p.m.

Institution of Electrical Engineers.—(Meeting at Institution of Civil Engineers).—If the discussion on Mr. Mordey's paper is closed, the following paper will be read: "The Electrical Power Bill of 1900: Before and After." By Mr. W. L. Madgen.

FRIDAY, FEBRUARY 22.

Royal Institution.—Sir W. Roberts-Austen on "Metals as Fuel." 9 p.m.

Institution of Civil Engineers (*Students' Meeting*).—Mr. J. L. Cridlan on "Automatic Coupling." 8 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Dr. J. Priestley, M.D., on "Duties of a Sanitary Inspector. Offensive Trades and Trade Nuisances. 8 p.m.

Glasgow Architectural Craftsmen's Society. — Mr J. G. Dunn on "The Practice of Chimney Building and Boiler Setting." 8 p.m.

SATURDAY, FEBRUARY 23.

Builders' Foremen and Clerks of Works' Institution.—Annual dinner, King's Hall, Holborn Restaurant. 6 p.m.

Edinburgh Architectural Association. — Visit to Bruntsfield House and St. Oswald's Church.

Royal Institution.—Right Hon. Lord Rayleigh, M.A. on "Sound and Vibration." I 3 p.m.

Sanitary Institute (*Demonstrations for Sanitary Officers*).—Inspection at Friern Barnet Sewage Works. 3 p.m.

Dundee Institute of Architecture.—Visit to General Accident Assurance Buildings, Perth.

Institution of Junior Engineers.—Visit the Willesden Station of the Metropolitan Electric Supply Company. 2.30 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 4.—By SEDGWICK, SON, & WEALL.

Edgware-rd.—No. 296, beneficial lease for 55½ yrs., r. 95*l.*, with goodwill	£5,250

By G. A. WILKINSON & SON.

Clapton.—52 and 54, Chatsworth-rd., u.t. 74½ yrs., g.r. 20*l.*, r. 110*l.*	1,660
Peckham.—1, 3, and 7, Dundas-rd., u.t. 69½ yrs., g.r. 12*l.*, r. 78*l.*	90
Dulwich.—35 to 51 (odd), Archdale-rd., u.t. 77 yrs., g.r. 40*l.* 10*s.*	1,535
Islington.—154 and 156, Copenhagen-st., u.t. 40 yrs., g.r. 12*l.*, r. 78*l.*	55

February 5.—By DEBENHAM, TEWSON & CO.

Oxted, Surrey.—Station Yard, a block of freehold land, 5a. 1r. 3p.	1,500
Camden Town.—20 to 28 (even), Camden-rd., u.t. 26 yrs., g.r. 35*l.*, r. 315*l.*	2,230
30 and 32, Camden-rd., u.t. 26 yrs., g.r. nil, r. 120*l.*	990
Holloway.—54, Hilldrop-cres., u.t. 49 yrs., g.r. 9*l.*	700
Battersea.—Auckland-rd., f.g.r. 14*l.*, reversion in 43 yrs.	405
Hammersmith.—Shepherd's Bush-rd., f.g.r. 27*l.*, reversion in 76 yrs.	770
Stamford Hill.—Seven Sisters-rd., f.g.r. 12*l.*, reversion in 76 yrs.	320
Willesden.—Vicarage-rd., f.g.r. 9*l.*, reversion in 79 yrs.	215
Mile End.—Longfellow-rd., f.g.r. 7*l.*, reversion in 59½ yrs.	180

By BOYTON, PEGRAM, & BUCKMASTER.

Kensington.—38, Comeragh-rd., u.t. 76 yrs., g.r. 10*l.*, r. 50*l.*	50

By HUNTER & HUNTER.

Regent-st.—Nos. 69 and 71, u.t. 17 yrs., g.r., &c., 179*l.* 5*s.* 6*d.*, r. 829*l.* 5*s.* 6*d.*	8,150
High Holborn.—No. 132, u.t. 24 yrs., g.r. 50*l.*, r. 200*l.*	1,175
Hyde Park.—38, Orsett-ter., u.t. 41½ yrs., g.r. 10*l.*, r. 115*l.*	1,060
65, Porchester-ter., u.t. 41½ yrs., g.r. 2*l.*	1,060
1, Inverness-ter., u.t. 54 yrs., g.r. 50*l.*, r. 370*l.*	5,500
7, 13, and 15, Inverness-ter., u.t. 54 yrs., g.r. 90*l.*	4,220
8, 12, 14, 16, and 22, Inverness-ter., u.t. 54 yrs., g.r. 150*l.*, r. 865*l.*	7,230

By NOTT CARTWRIGHT, & ETCHES.

Southall, Middlesex.—1, 2, and 3, South-view, r. 85*l.* 10*s.*; also two plots of building land, f.	1,000
Osterley Park-rd., Lyndhurst, f., e.r. 65*l.*	775
Hornsey.—60, Hampden-rd., u.t. 80 yrs., g.r. 7*l.* 10*s.*, e.r. 30*l.*	300
Pimlico.—6, Rutland-st., u.t. 24 yrs., g.r. 8*l.* r. 65*l.*	325
Balham.—53, 55, and 57, Elmfield-rd. f.r. 104*l.*	1,500
1, Balham Park-rd., u.t. 34½ yrs., g.r. nil, e.r. 110*l.*	1,300
Mitcham.—41 and 43, Graham-rd., f., r. 48*l.*	630

By LANGRIDGE & FREEMAN (at Tonbridge).

Hadlow, Kent.—Pitt's Wood, Correnden and Palmer-st. Farm, 93a. 0r. 21p., f.	3,000

February 6.—By G. GOULDSMITH, SON & CO.

Pimlico.—59, Denbigh-st., u.t. 29½ yrs., g.r. 8*l.*, r. 65*l.*	535

By HUNTER & HUNTER.

Hyde Park.—39, 40, 41, 43 and 44, Porchester-sq., u.t. 42½ yrs., g.r. 75*l.*, r. 565*l.* (in lots)	4,930
15, 17, 18, 19, 20, 21, 22, 23 and 24, Porchester-sq., u.t. 48½ yrs., g.r. 164*l.*, r. 1,135*l.* (in lots).	10,520

By DOUGLAS YOUNG & CO.

Romford, Essex.—Essex-rd., four plots of building land, f.	120
Hornsey.—5, Church-lane, u.t. 81 yrs., g.r. 9*l.*, r. 50*l.*	500
Clapham.—9, Albert-sq., u.t. 45 yrs., g.r. 5*l.*, r. 58*l.*	520
Tottenham.—89 and 91, High Cross-rd., f., r. 40*l.*	700

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Works and Materials	Tottenham U.D.C.	E. Crowne, 712, High-road, Tottenham	Feb. 19
Granite and Slag, Stony Stratford	Potterspury R.D.C.	W. H. P. Pritchard, Surveyor, Wicken, Stony Strutford	do.
Excavation Works, Paving, &c.	Tynemouth Corporation	J. F. Smillie, Borough Surveyor, Tynemouth	do.
Street Works, Netherton and Woodside	Dudley Corporation	J. Gammage, Borough Surveyor, Town Hall, Dudley	do.
Steel Rails (1,600 tons), &c., Egremont	Wallasey U.D.C.	W. H. Travers, Engineer, Church-street, Egremont	do.
Board Room and Offices, Hall-street	Todmorden Union Guardians	J. Horsfall, Architect, Burnley-road, Todmorden	do.
Additions, &c., to Shire Hall, Haverfordwest	Pembrokeshire County Council	A. H. Thomas, Shire Hall, Haverfordwest	do.
Street Works, Herrett-street, &c.	Aldershot U.D.C.	N. F. Dennis, Surveyor, Council Offices, Aldershot	do.
Broken Granite, &c.	East Retford (Notts) Corporation	J. D. Kennedy, Borough Surveyor, Town Hall, East Retford	do.
Road Metal	Salisbury R.D.C.	D. W. Morrice, Surveyor, Homington, Salisbury	do.
Additions to School, Lidget Green	Bradford School Board	W. Bailey, Architect, 9, Market-street, Bradford	do.
Iron Staircase at Workhouse	Manchester Guardians	A. J. Murgatroyd, 23, Strutt-street, Manchester	Feb. 20
Church, Platt Bridge, near Wigan	.....	J. Wills, Architect, Victoria Chambers, Derby	do.
Baptist Chapel, near Abertillery, Mon.	.....	Rev. B. Davies, 9, Rosebery-street, Abertillery	do.
Business Premises, Hellifield	Skipton Co-op. Society, Ltd.	J. Hartley, Architect, Skipton	do.
Two Pairs Cottages, Stowlangloft, Suffolk	.....	J. Birmingham, Estate Office, Stowlangloft	do.
Electrical Conduits	Dundee Gas Commissioners	W. H. Tittensor, Engineer, Dudhoe Crescent-road, Dundee	do.
Two Houses, Moldgreen, Huddersfield	.....	J. Berry, Architect, 9, Queen-street, Huddersfield	do.
Road Works, Cartmel-road, Keighley	.....	Barber, Hopkinson, & Co., Engrs., Craven Bank Chmbrs., Keighley	do.
Bridge and Approaches, St. Annes-on-Sea	Lancs & Yorks Railway Company	R. C. Irwin, Hunt's Bank, Manchester	do.
Shed, Dewsbury Moor	.....	Holtom & Fox, Architects, Corporation-street, Dewsbury	do.
Dyeworks, Elland, Yorks	.....	E. C. Brooke, Architect, 6, Huddersfield-road, Brighouse	do.
Road Metalling, &c., New Monkland, Hamilton, N.B.	.....	A. Rankin, Surveyor, Airdrie	do.
Flints and Ragstone	Uckfield (Sussex) R.D.C.	F. Holman, 86, High-street, Lewes	do.
Additions, &c., to School, Balmedie, Aberdeen	.....	Brown & Watt, Architects, Aberdeen	Feb. 21
Cottage, &c., Parc Gwyllt, Bridgend	.....	T. T. Lewis, Bridgend, Glam.	do.
House, Stable, &c., Birkby, Huddersfield	.....	J. B. Abbey & Son, Surveyors, 34A, New-street, Huddersfield	do.
Artisans' Dwellings, Upper Rathmines	Rathmines, &c., U.D.C.	F. J. Hicks, Architect, 28, South Frederick-street, Dublin	do.
Earthenware Sewers	Oldbury U.D.C.	J. T. Eayrs, Civil Engineer, 39, Corporation-street, Birmingham	do.
Tall Chimney, Wheatley, Halifax	.....	W. H. D. Horsfall, Architect, Tower Chambers, Halifax	do.
Making-up Montpelier-road and others	Sutton (Surrey) U.D.C.	C. C. Smith, Surveyor, Municipal Offices, Sutton	do.
Cast-iron Pipes, &c.	Salford Corporation	L. C. Evans, Town Hall, Salford	do.
Steel Gasholder	Haverfordwest Corporation	R. T. P. Williams, Council Chambers, Haverfordwest	do.
Granite (5,975 tons) and Slag (1,457 tons)	Horncastle (Lincs) R.D.C	J. E. Chatterton, Council Offices, Horncastle	do.
Building Work at Presbyterian Church, Donagheady	.....	M. A. Robinson, Architect, Richmond-street, Londonderry	do.
Additions to Business Premises, Workington	Mr. J. Jessop	W. G. Scott & Co., Architects, Victoria Buildings, Workington	Feb. 22
Asphalting, Kerbing, &c., Market-square	Rhyl U.D.C.	A. A. Goodall, Surveyor, Council Offices, Rhyl	do.
Surveyors' Materials	Rawtenstall (Lancs) Corporation	Borough Surveyor, Municipal Offices, Rawtenstall	do.
Four Houses, Gordon-street, Elland	Halifax Industrial Society, Ltd	R. Horsfall & Son, Architects, 22A, Commercial-street, Halifax	do.
Granite and Slag	Hardingstone R.D.C.	J. Haviland, 2, St. Giles'-square, Northampton	do.
Additions to School and House, New Wortley, Leeds	Trustees	H. Bannister, Hall-lane, New Wortley	do.
Malting Premises, Clayton, near Bradford	.....	S. Spencer, Architect, 344, Great Horton-road, Bradford	do.
Additions to Schools, Abercarn, Mon.	Mynyddislwyn School Board	R. L. Roberts, Architect, Abercarn	do.
Main Sewer, Railway-terrace, &c.	Rugby U.D.C.	D. G. Macdonald, Civil Engineer, Rugby	Feb. 23
Additions to Baths, Almshouse-lane	Wakefield Corporation	City Surveyor, Town Hall, Wakefield	do.
Pavilion, Walker Park	Walker (Northumberland) U.D.C.	T. W. Laycock, Surveyor, Church-street, Walker	do.
Cast-iron Pipes, &c.	Bury (Lancs) Water Board	J. Cartwright, Civil Engineer, Peel Chambers, Market Place, Bury.	do.
Pair Villas, Queen's-road, Broadstairs	Mr. R. Howell	R. Howell, 1, Davenport-road, Catford, S.E.	do.
Granite, Limestone, &c.	Hunslet R.D.C.	W. B. Pindar, Glasshouse-street, Hunslet, Leeds	do.
Trial Boring, Hitcham, Suffolk	Cosford R.D.C.	A. Newman, Council Offices, Churchgate-street, Hadleigh	do.
Road Metal, &c., Lewes	East Sussex County Council	F. J. Wood, Civil Engineer, County Hall, Lewes	do.
Chimney Stalk (200 feet), Dee Village	Aberdeen Town Council	A. Smith, Engineer, Gasworks, Aberdeen	do.
*Painting, &c.	St. Marylebone Guardians	Steward, Infirmary, Rackham-street, Notting Hill	Feb. 25
*Taking Down and Removing Dwelling Houses	Norwich Union Life Insurance Soc.	See Advertisement	do.
Road Materials	Llandaff, &c., R.D.C.	J. Holden, Civil Engineer, 35, St. Mary-street, Cardiff	do.
Alterations, &c., to Town Hall, Hove	.....	H. H. Scott, Borough Surveyor, Town Hall, Hove, Sussex	do.
Granite and Slag	Sibsey (Lincs) R.D.C.	J. M. Simpson, Boston	do.
Business Premises, Gortmore, Ireland	Mr. B. McElhinny	M. Sellars, Architect, Omagh	do.
Wesleyan Chapel, Westgate Hill, Bradford	.....	Walker & Collinson, Architects, Swan Arcade, Bradford	do.
Additions to School, Mina-road	Bristol School Board	W. P. Saunders, Architect, Quay-street, Bristol	do.
Baptist Church, Kay-street, Rawtenstall, Lancs.	.....	J. H. Spencer, Architect, Bury-road, Rawtenstall	do.
Tramway Materials	Darwen Corporation	R. W. Smith-Saville, Civil Engineer, Municipal Offices, Darwen	do.
Electrical Plant	Beckenham U.D.C.	R. P. Wilson, 66, Victoria-street, S.W.	do.
Asphalting, Bricks, Cement, &c.	Sheffield Corporation	C. F. Wike, Civil Engineer, Town Hall, Sheffield	do.
Kentish Ragstone (800 tons)	Hastings Corporation	P. H. Palmer, Civil Engineer, Town Hall, Hastings	do.
Guernsey Granite, Basalt, &c.	Hastings Corporation	do	do.
Residence, Camborne, Veor, Cornwall	.....	S. Hill, Architect, Green-lane, Redruth	do.
*Works and Materials	Camberwell Corporation	See Advertisement	do.
*Works and Materials	Westminster City Council	Town Hall, Charing Cross-road, W.C.	Feb. 26
Rebuilding Inn, High-street, Merthyr Tydfil	.....	C. M. Davies, Architect, 112, High-street, Merthyr	do.
*Road Widening	Willesden District Council	Engineer, Public Offices, Dyne-road, Kilburn, N.W.	do.
*Kentish Flints	Barking Town U.D.C.	Public Offices, Barking	do.
*Culvert	Bristol Sanitary Committee	City Engineer, 63, Queen-square, Bristol	Feb. 27
*Works and Materials	Hampstead Borough Council	Borough Surveyor, Town Hall, Haverstock Hill, N.W.	do.
*Works and Materials	Hackney Borough Council	Borough Engineer, Town Hall, Hackney	Feb. 28
*Granite	Thame R.D.C.	J. Goodenough, District Surveyor, Thame	do.
Bathing Establishment, Whitley, Northumberland	Whitley, &c., U.D.C.	J. P. Spencer, Civil Engineer, Newcastle-on-Tyne	do.
*Portland Cement	London County Council	Manager, L. C. C. Works Department, Belvedere-road, S.E.	Mar. 1
Gas Purifiers	East Dereham U.D.C.	B. H. Vores, Council Offices, East Dereham	Mar. 2
*Maintenance and Repair of Main Roads	Kent County Council	County Surveyor, 86, Week-street, Maidstone	Mar. 5
*Wood Paving	Tottenham U.D.C.	Engineer, 712, High-road, Tottenham	do.
*Broken Granite	Middlesex County Council	H. T. Wakelam, Guildhall, Westminster	do.
*Guernsey Granite	do.	do.	do.
*Sewerage Works	South Stoneham R.D.C.	F. Wentworth-Sheilds, 1, Cranbury-road, Southampton	Mar. 7
*Superstructure of Avonbank Electricity Works	Bristol Electrical Committee	Secretary, Electricity Department, Temple Back, Bristol	Mar. 12
*Infants' School	Feltham School Board	See Advertisement	Mar. 22
*Hotel, Weybourne-on-Sea	.....	R. Carter, Architect and Surveyor, Cromer	No date
Business Premises, South Denes, Great Yarmouth	Mr. E. A. Baker	G. Waller, Architect, Middlegate-street, Great Yarmouth	do.
Additions to Crown Works, Leeds	Mr. A. W. Midgley	A. E. Dixon, Architect, 5, Park-lane, Leeds	do.
Lodge, Cottages, &c., Grantley, near Ripon	Sir C. Furness	Bland & Brown, Architects, Harrogate	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Clerk of Works	Dartford R.D.C.	4*l.* 4s. per week	Feb. 25
*Architectural Assistant	Newport Corporation	3*l.* 10s. per week	do.
*Clerk of Works	Brentford Union	4*l.* 4s. per week	Feb. 27
*Architectural Draughtsman	Bury Tramways Committee	.....	Feb. 28
*Junior Assistant	Ipswich Corporation	78*l.* per annum	Mar. 1
*City Engineer and Surveyor	Westminster City Council	1,000*l.* per annum	Mar. 2

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.		
Hard Stocks	1 15 0	per 1,000 alongside, in river.	
Rough Stocks and Grizzles	1 12 0	,,	,, ,,
Smooth Bright Facing Stocks	2 18 0	,,	,, ,,
Shippers	2 8 0	,,	,, ,,
Flettons	1 9 0	,,	,, ,,
Red Wire Cuts	1 15 6	,,	,, ,,
Best Fareham Red	3 11 6	,,	,, ,,
Best Red pressed Ruabon Facing	5 5 0	,,	,, ,,
Best Blue Pressed Staffordshire	4 7 0	,,	,, ,,
Do., Bullnose	4 12 0	,,	,, ,,
Best Stourbridge Fire Bricks	4 4 6	,,	,, ,,
GLAZED BRICKS.			
Best White and Ivory Glazed Stretchers	13 0 0	,,	,, ,,
Headers	12 0 0	,,	,, ,,
Quoins, Bullnose, and Flats	17 0 0	,,	,, ,,
Double Stretchers	19 0 0	,,	,, ,,
Double Headers	16 0 0	,,	,, ,,
One Side and two Ends	19 0 0	,,	,, ,,
Two Sides and one End	20 0 0	,,	,, ,,
Splays, Chamfered, Squints	20 0 0	,,	,, ,,
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	,,	,, ,,
Quoins, Bullnose, and Flats	14 0 0	,,	,, ,,
Double Stretchers	15 0 0	,,	,, ,,
Double Headers	14 0 0	,,	,, ,,
One Side and two Ends	15 0 0	,,	,, ,,
Two Sides and one End	15 0 0	,,	,, ,,
plays, Chamfered, Squints	14 0 0	,,	,, ,,
Seconds Quality White and Dipped Salt Glazed	2 0 0	,,	less than best.

	s. d.	
Thames and Pit Sand	7 6	per yard, delivered.
Thames Ballast	6 3	,, ,,
Best Portland Cement	38 0	per ton ,,
Best Ground Blue Lias Lime	25 6	,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 13s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks, 32s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
Ancaster in blocks	2 0	per ft. cube, deld. rly. depôt.
Bath ,,	1 7	,, ,,
Farleigh Down Bath	1 8	,, ,,
Beer in blocks	1 6½	,, ,,
Grinshill ,,	1 10	,, ,,
Brown Portland in blocks	2 2	,, ,,
Darley Dale in blocks	2 1½	,, ,,
Red Corsehill ,,	2 5	,, ,,
Red Mansfield ,,	2 4½	,, ,,
Hard York in blocks	2 10	,, ,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2 8	per ft. super. at rly. depôt.
,, ,, 6 in. Rubbed Ditto	3 0	,, ,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1 3	,, ,,
,, ,, 3 in. self-faced Ditto	0 9½	,, ,,

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor	11 5 0	per 1000 of 1200 at ry. dep
,, best seconds ,,	10 15 0	,,
16× 8 best ,,	6 2 6	,, ,,
20×10 best blue Portmadoc	10 18 0	,, ,,
16× 8 best blue Portmadoc	6 0 0	,, ,,
20×10 best Eureka unfading green	11 2 6	,, ,,
16× 8 ,, ,,	6 15 0	,, ,,
20×10 Permanent green	10 0 0	,, ,,
16× 8 ,, ,,	5 12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	41 6	per 1,000 at rly. depôt.
Hip and valley tiles	3 7	per doz. ,, ,,
Best Broseley tiles	48 6	per 1,000 ,, ,,
Hip and valley tiles	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	50 9	per 1,000 ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	16 10 0	18 0 0
Deals: best 3 by 9	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.	12 10 0	13 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	,, ,, ,,

	At per load of 50 ft. £ s. d.	£ s. d.
Fir timber: Best middling Danzig or Memel (average specification)	4 10 0	5 0 0

PRICES CURRENT (*Continued*).

WOOD.

	At per load of 50 ft. £ s. d.	£ s. d.
Fir Timber—		
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Swedish balks	2 15 0	3 0 0
Pitch pine timber (35 ft. average)	4 0 0	4 10 0
JOINERS' WOOD.	At per standard.	
White Sea: First yellow deals, 3 in. by 11 in.	27 10 0	28 10 0
3 in. by 9 in.	24 0 0	25 0 0
Battens, 2½ in. and 3 in. by 7 in.	20 0 0	21 0 0
Second yellow deals, 3 in. by 11 in.	22 10 0	24 0 0
,, ,, 3 in. by 9 in.	20 0 0	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	16 10 0	18 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	25 0 0	26 0 0
Do. 3 in. by 9 in.	22 0 0	23 0 0
Battens	16 10 0	17 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
Do. 3 in. by 9 in.	17 0 0	18 0 0
Battens	14 0 0	14 10 0
Third yellow deals, 3 in. by 11 in.	15 0 0	16 10 0
Do. 3 in. by 9 in.	14 0 0	14 10 0
Battens	12 10 0	13 10 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	15 10 0	16 10 0
,, ,, ,, 3 in. by 9 in.	14 0 0	15 0 0
Battens	12 10 0	13 10 0
Second white deals 3 in. by 11 in.	14 0 0	15 0 0
,, ,, ,, 3 in. by 9 in.	13 0 0	14 0 0
,, ,, battens	11 0 0	12 0 0
Pitch pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—		
First, regular sizes	30 0 0	33 0 0
Broads (12 in. and up)	2 0 0	more.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—		
Planks, per ft. cube	0 3 6	0 4 6
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 2 6	0 2 8
Small ,, ,,	0 2 4	0 2 7
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
½ in. do. do.	0 0 7	- - -
Dry Mahogany—		
Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 0 0	20 0 0
American Whitewood Planks—		
Per ft. cube	0 2 3	0 3 0

JOISTS, GIRDERS, &c.

	In London, or delivered to Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	8 0 0	9 0 0
Compound Girders ,, ,,	9 10 0	10 15 0
Angles, Tees and Channels, ordinary sections	9 12 6	11 12 6
Flitch Plates	10 0 0	10 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	8 5 0	10 0 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON.—		
Common Bars	9 10 0	- - -
Staffordshire Crown Bars, good merchant quality	9 15 0	10 0 0
Staffordshire "Marked Bars"	11 10 0	- - -
Mild Steel Bars	9 10 0	10 10 0
Hoop Iron, basis price	10 5 0	10 15 0
,, ,, galvanised	16 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.	10 15 0	- - -
,, ,, to 24 g.	11 15 0	- - -
,, ,, to 26 g.	13 5 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality.—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	13 0 0	- - -
,, ,, 22 g. and 24 g.	13 15 0	- - -
,, ,, 26 g.	15 10 0	- - -
Sheet Iron, galvanised, flat, best quality.—		
Ordinary sizes to 20 g.	17 0 0	- - -
,, ,, 22 g. and 24 g.	17 10 0	- - -
,, ,, 26 g.	19 0 0	- - -
Galvanised Corrugated Sheets.—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	13 0 0	- - -
,, ,, 22 g. and 24 g.	13 10 0	- - -
,, ,, 26 g.	14 0 0	1 10 0
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	13 0 0	- - -
,, ,, 22 g. and 24 g.	14 0 0	- - -
,, ,, 26 g.	15 0 0	- - -
Cut nails, 3 in. to 6 in.	11 10 0	- - -
(Under 3 in. usual trade extras.)		
LEAD—Sheet, English, 3 lbs. & up.	18 5 0	- - -
Pipe in coils	18 15 0	- - -
Soil Pipe	21 5 0	- - -
ZINC—Sheet—		
Vieill6 Montagne ..... ton		
Silesian		
COPPER—		
Strong Sheet ..... per lb.	0 1 1	- - -
Thin ,,	0 1 3	- - -
Copper nails ,,	0 1 3	- - -
BRASS—		
Strong Sheet ,,	0 0 11	- - -
Thin ,, ,,	0 1 1	- - -
TIN—English Ingots ,,	0 1 -	- - -
SOLDER—Plumbers' ,,	0 0 8½	- - -
Tinmen's ,,	0 0 9	- - -
Blowpipe ,,	0 0 10	- - -

PRICES CURRENT (*Continued*).

ENGLISH SHEET GLASS

15 oz. thirds	2¾d. per ft. delivered.
,, fourths	2¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, ,, fourths	3¼d. ,, ,,
26 oz. thirds	4¼d. ,, ,,
,, ,, fourths	4¼d. ,, ,,
32 oz. thirds	5¼d. ,, ,,
,, ,, fourths	5¼d. ,, ,,
Fluted sheet, 15 oz.	3¼d. ,, ,,
,, ,, 21 ,,	4¼d. ,, ,,
½ Hartley's Rolled Plate	3d. ,, ,,
⅝ ,, ,, ,,	3½d. ,, ,,
¾ ,, ,, ,,	4d. ,, ,,

OILS, &c.

	£ s. d.
Raw Linseed Oil in pipes ..... per gallon	0 2 6
,, ,, ,, in barrels ,,	0 2 5
,, ,, ,, in drums ,,	0 2 8
Boiled ,, ,, in pipes ,,	0 2 8
,, ,, ,, in barrels ,,	0 2 9
,, ,, ,, in drums ,,	0 2 11
Turpentine, in barrels ,,	0 2 7
,, in drums ,,	0 2 9
Genuine Ground English White Lead ... per ton	27 0 0
Red Lead, Dry ,,	25 10 0
Best Linseed Oil Putty ..... per cwt.	0 9 0
Stockholm Tar ..... per barrel	1 10 0

VARNISHES, &c.

	per gallon £ s. d.
Fine Elastic Copal Varnish for outside work	0 16 6
Best Elastic Copal Varnish for outside work	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 6
Best Hard Oak Varnish for inside work	0 10 6
Best Extra Hard Church Oak Varnish for inside work	0 10 6
Fine Hard Copal Varnish for inside work	0 16 0
Best Hard Copal Varnish for inside work	1 0 0
Best Hard Carriage Varnish for inside work	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 9 0
Berlin Black	0 15 0
Knotting	0 10 0
Best French and Brush Polish	0 10

TO CORRESPONDENTS.

"Hampstead" (We have no information on the subject.) R. M. G. (Below our limit.) W. & N.—J. B.—H. C. (Amounts should have been stated.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

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TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

AMERSHAM.—For proposed alterations and additions to the Chesnuts, Amersham Common. Mr. Guest Luckett, architect, Aylesbury:—

Sherwin	£1,172	Hunt	£946
Darvell	1,090	Matthews	33
Darlington	1,029	Crook & Sons	
Mead	998	Senior & Clarke	728

BIRKENHEAD.—For erecting a warehouse, for Mr. James Morris, 80, Grange-road, and Argyle-street. Mr. C. O. Francis, architect, 5, Richmond-street, Liverpool. Quantities by architect:—

W. H. Forde	£1,136 2 0	R. Allen, Priory-street, Birkenhead†	£990 0 0
P. Rothwell	1,045 0 0		
Thomas & Son	1,022 0 0		
J. Merritt	1,011 0 0		

CLATTERBRIDGE (Cheshire).—For additions to infirmary, together with new shippon, &c., at Wirral Union Workhouse, for the Wirral Guardians. Mr. C. O. Francis, architect, 5, Richmond-street, Liverpool. Quantities by architect:—

W. H. Forde	£812 13 2	Thomas & Son, Oxton Village, Birkenhead*	£629 0 0
R. Allen	755 0 0		
W. R. Holland	638 0 0		
J. Hardwick	632 0 0		

DERBY.—For the erection of a chimney shaft, for the Corporation. Mr. A. Eaton, architect, 6, St. James'-street, Derby. Quantities by the architect:—

Radford & Greaves, Derby £1,433

DURHAM.—For the erection of an engine house at sewage disposal works, for the Urban District Council. Mr. H. W. Taylor, A.M.Inst.C.E., St. Nicholas-chambers, Newcastle-on-Tyne:—

J. Miller	£1,564 0	C. W. Gibson, Durham*	£1,297 10
Gradon & Son	1,398 0		

Engineer's estimate, £1,500.]

[*See also next page.*

DEVONPORT.—For the erection of St. Budeaux Board School, for the Devonport School Board. Messrs. Hine & Odgers, architects :—

Berry	£19,555	Coles	£15,878
Goad	17,850	Andrews	15,850
Blackell	17,711	Matcham & Co.	15,673
Roach & Lovell	17,350	Wakeham	15,138
Carter	16,681	Lethbridge	14,980
Skinner	16,349	Allen & Tozer	14,951
Paynter	16,250	Lapthorn & Co.	14,666
Trevena	16,100	Blake	13,900
May	16,055		

GRAYS (Essex).—For the erection of cottage and stables adjoining Ravenswood. Mr. Christopher M. Shiner, architect, 3, Bond-court, Walbrook, E.C., and Grays :—

Hammond & Son	£639 0	Brown	£560 0
Lawrence	605 0		

GRIMSBY.—For the erection of four shops, Pasture-street, for Messrs. Hewitt Brothers, Limited. Mr. Herbert C. Scaping, architect, Court-chambers, Grimsby. Quantities by Mr. J. Watson, Hull :—

G. & J. Smith	£2,800 0 0	H. Marrows	£2,561 15 6
Thompson & Sons	2,800 0 0	W. Ion	2,527 10 0
Hewins & Goodhand	2,763 12 0	Gilbert & Kirton*	2,478 4 1

LONDON.—For alterations and additions to No. 40, Woodgrange-road, Forest Gate, E., for Messrs. Lord & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E. :—

G. E. Todd & Co,	£2,469	I. & H. Cocks, Ltd.	£2,172
A. E. Symes	2,195	W. J. Maddison*	1,947

NEWPORT (Mon.).—For the erection of a council chamber, offices, &c., Pentonville, for the Monmouthshire County Council. Mr. W. Tanner, County Surveyor, Newport, Mon. :—

Jones Bros.	£10,335	J. Moore	£8,830
A. E. Parfitt	9,900	C. H. Reed	8,800
Bowers & Co.	9,570	W. A. Linton	8,780
T. G. Diamond	9,500	E. C. Jordan	8,697
Morgan & Co.	9,161	Richards & Co., Newport*	8,470
J. Linton	9,140		
W. M. Blackburn	8,995		

PARKSTONE (Dorset).—For the erection of a house and shop, Sandbanks-road, for Mr. G. Kilford. Mr. Walter Andrew, architect, Parkstone :—

Jenkins & Son	£1,497 0 0	A. & F. Wilson	£1,050 0 0
E. Smith	1,350 0 0	Burt & Vick	998 0 0
Baker & Pearcey	1,094 0 0	J. Challis, Upper Parkstone*	987 10 8
Rigler	1,050 0 0		

POOLE.—For the erection of a car-shed, offices, boundary walls, &c. Mr. C. W. G. Little, engineer, the British Electric Traction Company, Donington House, Norfolk-street, Strand, W.C. :—

Jones & Seward	£2,724	Burt & Vick, Poole*	£2,142
Jenkins & Sons	2,655		

SHEFFIELD.—For alterations and additions to the Howard Hotel, Howard-street and Pond-street, Sheffield, for Messrs. the Directors of Thomas Rawson & Co., Ltd., Sheffield. Messrs. Hall & Fenton, 14, St. James'-row, Sheffield. Quantities by the architects :—

G. H. May	£1,734 8 5	T. Margerrison	£1,383 0 0
W. H. Bowden	1,719 0 0	G. & C. Earl	1,378 0 0
Geo. Vaughan	1,609 0 0	C. H. Gillam	1,270 0 0
J. L. Lilleker	1,507 8 0	J. S. Teanby, Carterknowle-road*	1,240 0 0
F. Turner	1,490 0 0		
A. Bradbury	1,469 0 0		
Bee & Son	1,402 0 0		

SOUTH SHIELDS.—For alterations to premises, No. 7, Victoria-terrace, for Mr. John Shotton, jun., Mr. Henry Grieves, architect, Albany Chambers, South Shields :—

General Trades.—M. Hall, jun., South Shields	£225 0
Encaustic Tiles.—Walker & Son, Newcastle	74 5
Granite Work.—Farbridge & Son, South Shields	45 10
	£344 15

SWANLEY.—For the erection of the White Oak Schools, for the Metropolitan Asylums Board. Quantities by Messrs. W. H. & P. B. Strudwick, New Inn Chambers, Wych-street, Strand, W.C. Messrs. Newman & Newman, architects and surveyors, 31, Tooley-street, London Bridge, S.E. :—

Balaam Bros.	£151,256	B. E. Nightingale	£133,227
Leslie & Co.	141,450	Willmott & Sons	122,915
Foster & Dicksee	140,270	Lorden & Son	121,888
R. L. Tonge	138,652	J. J. Wise	116,035
Stephens, Bastow, & Co.	135,209	Martin Wells & Co.	115,000
		C. Wall, Chelsea*	112,324

TREDEGAR (Mon.).—For the erection of a chapel and schoolroom, Commercial-road. Mr. W. S. Williams, architect, Elmwood, Tredegar :—

Rees Edwards, Tredegar*	£1,460	D. J. Vaughan	£1,322 [Withdrawn.]

WEST BRIDGFORD (Nottingham).—For erecting a single house, Millicent-road, West Bridgford, according to plans and quantities by Mr. William R. Gleave, architect, 18, Low-pavement, Nottingham :—

G. A. Pillatt, Nottingham* £572

WEST BRIDGFORD (Nottingham).—For erecting a single house, Bridgford-road, West Bridgford, according to plans and quantities by Mr. William R. Gleave, architect, 18, Low-pavement, Nottingham :—

W. & J. Simons, Nottingham† £739

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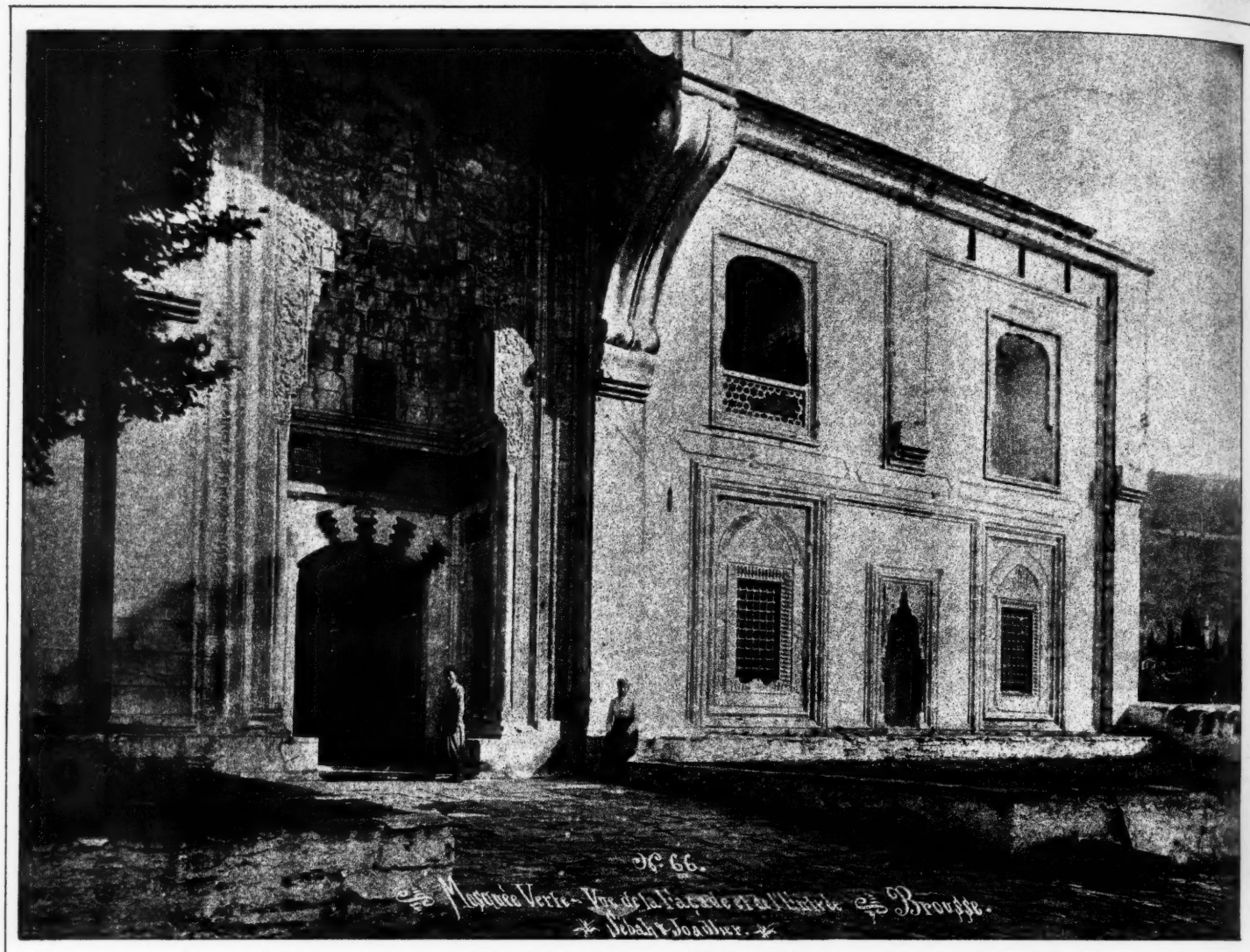

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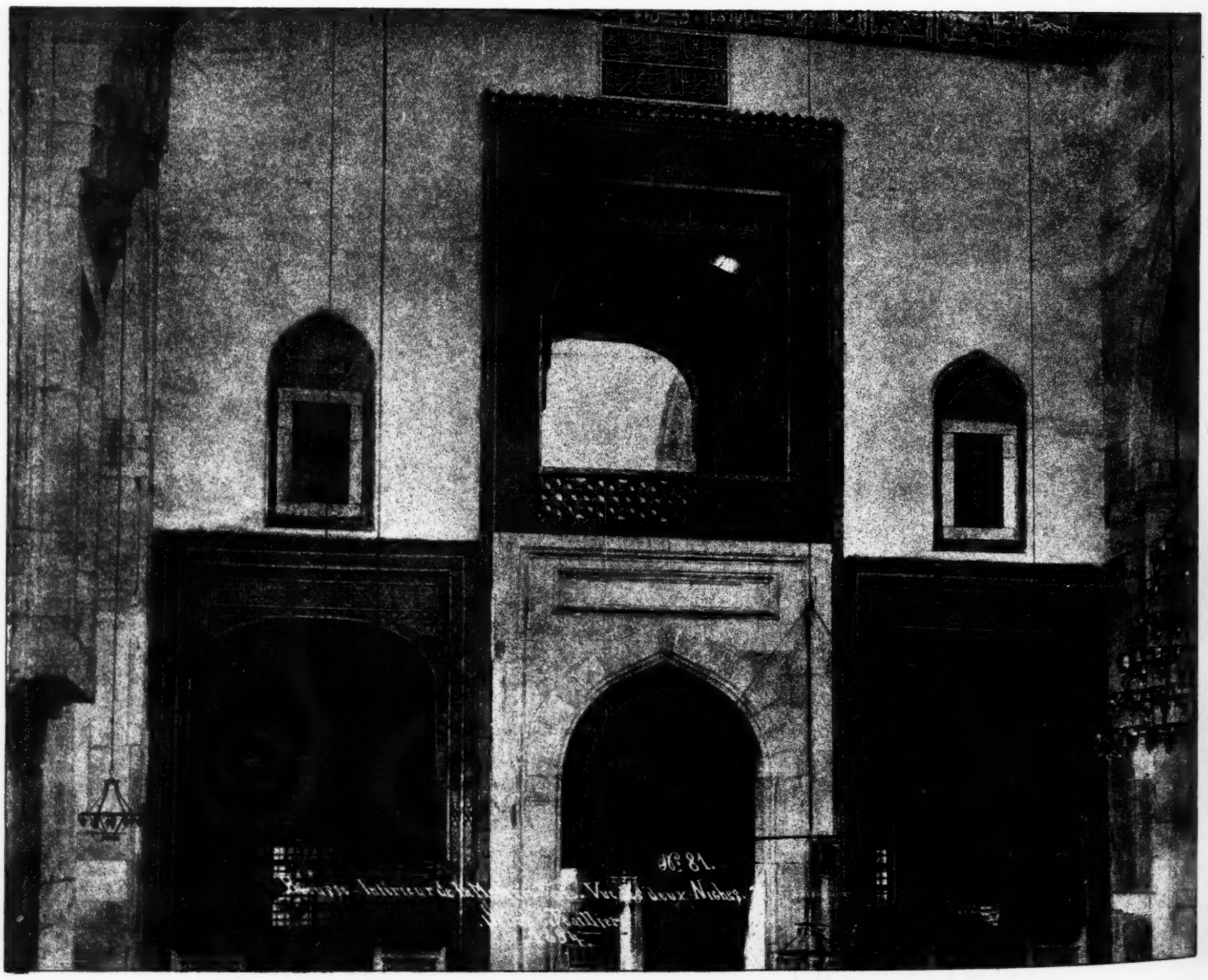

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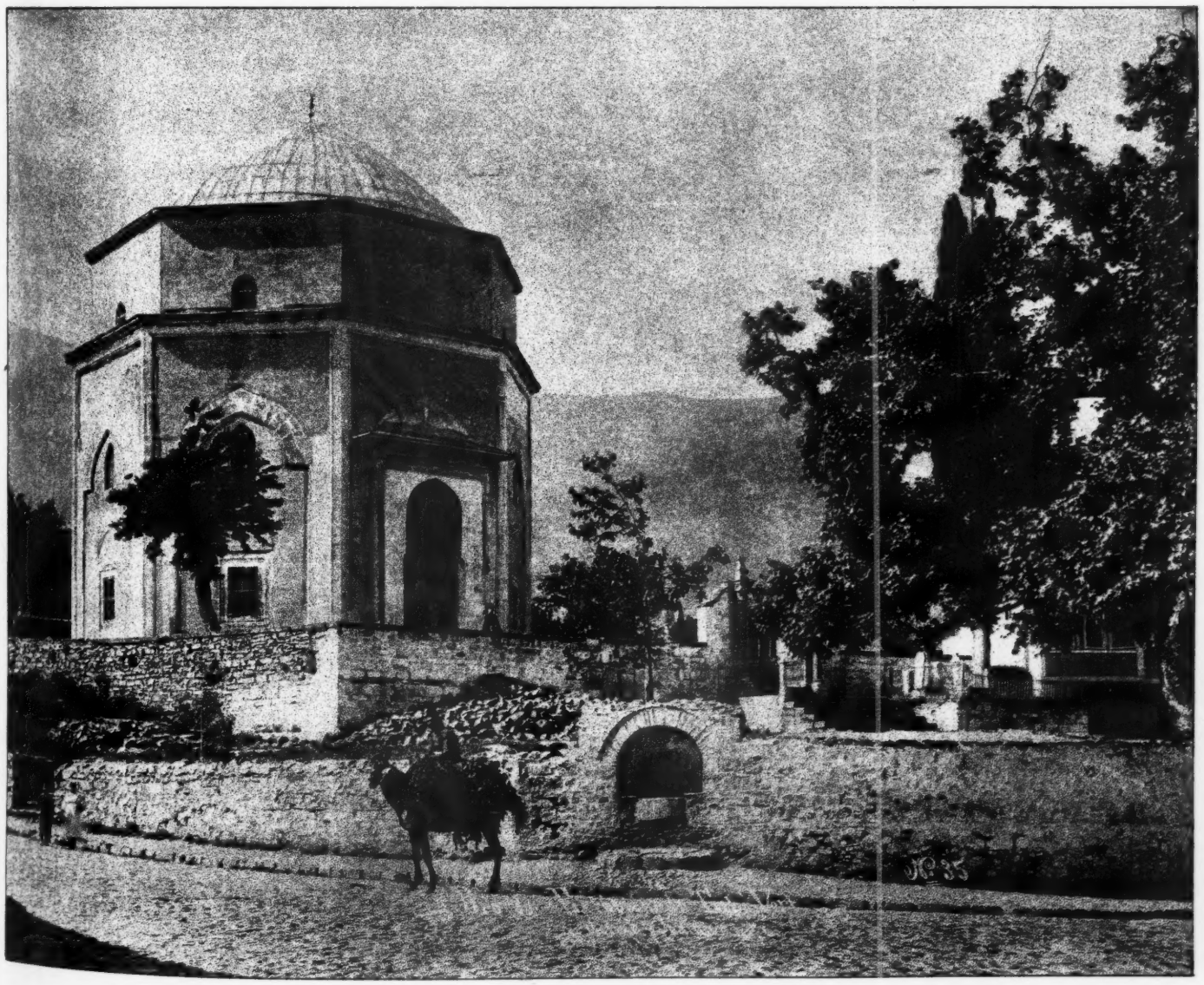

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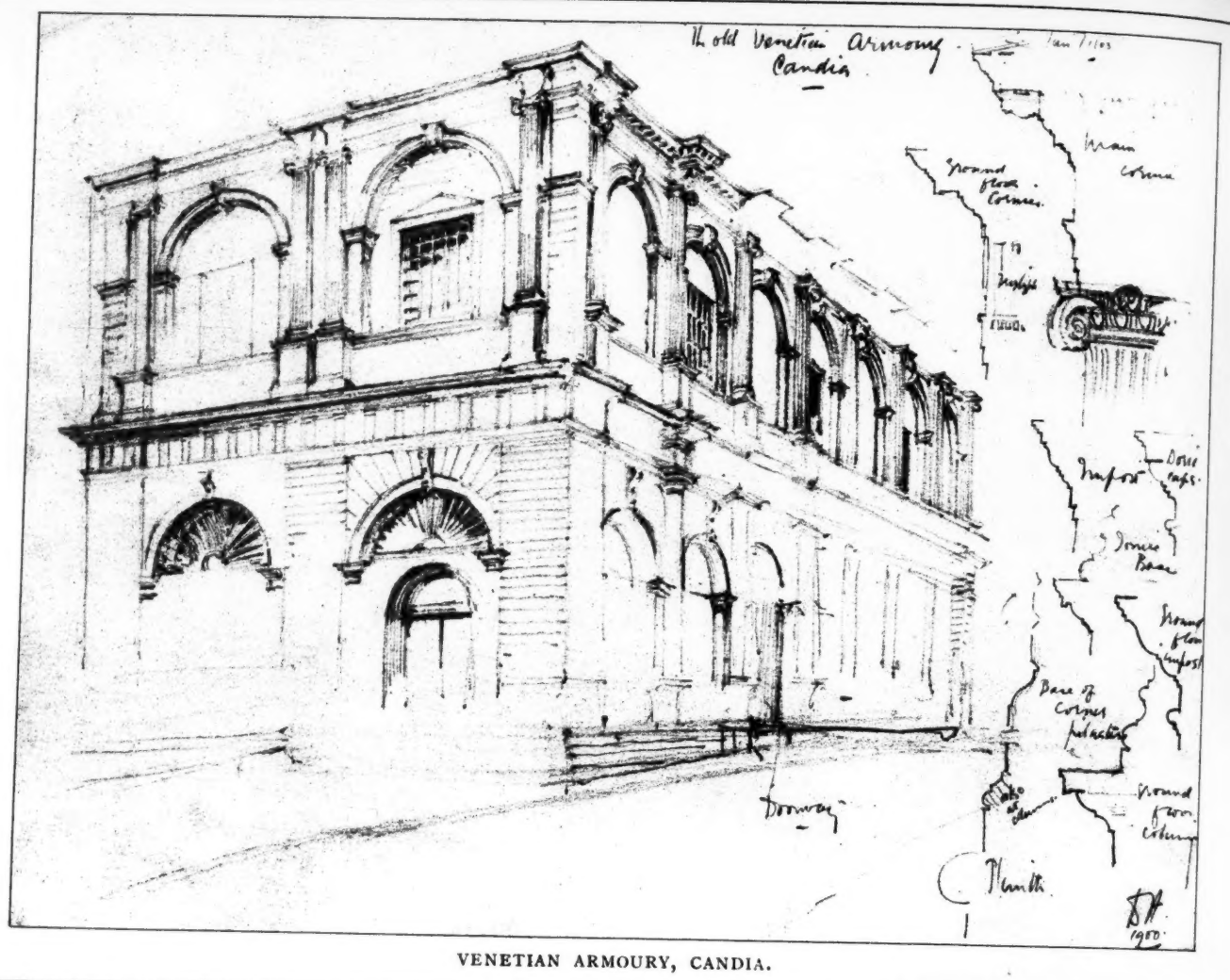

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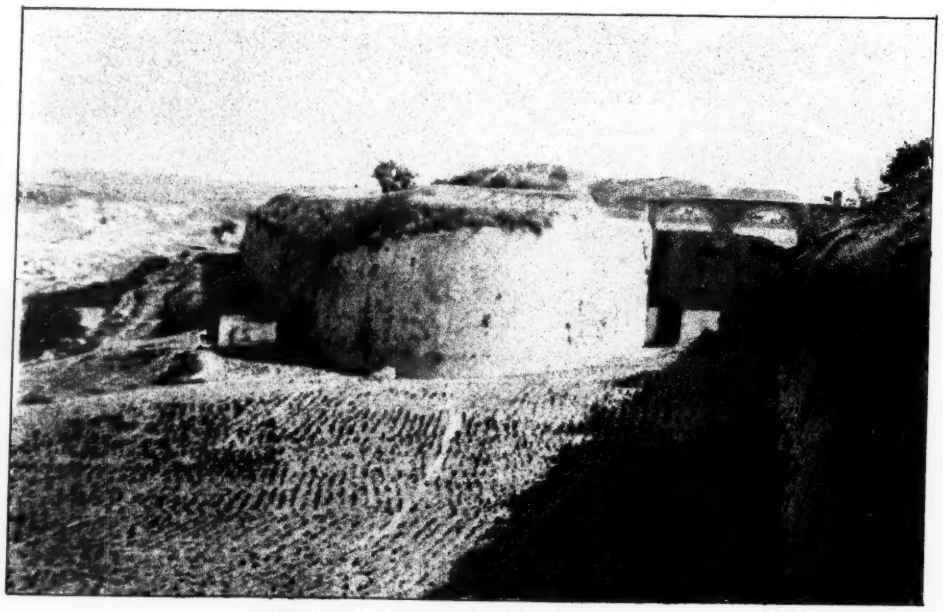

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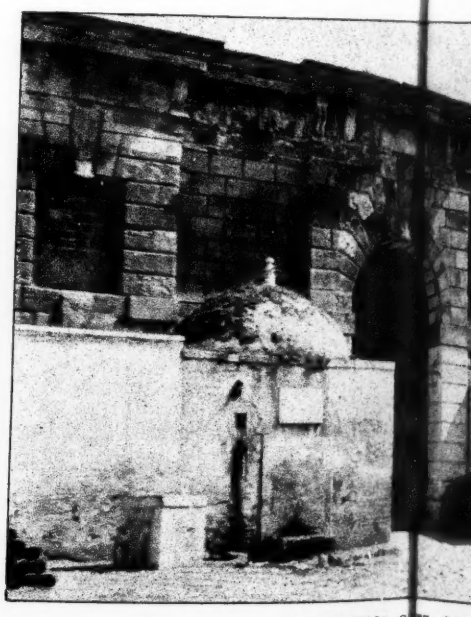

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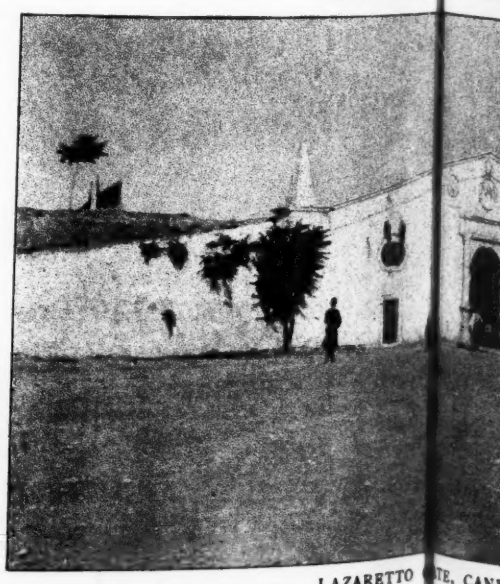

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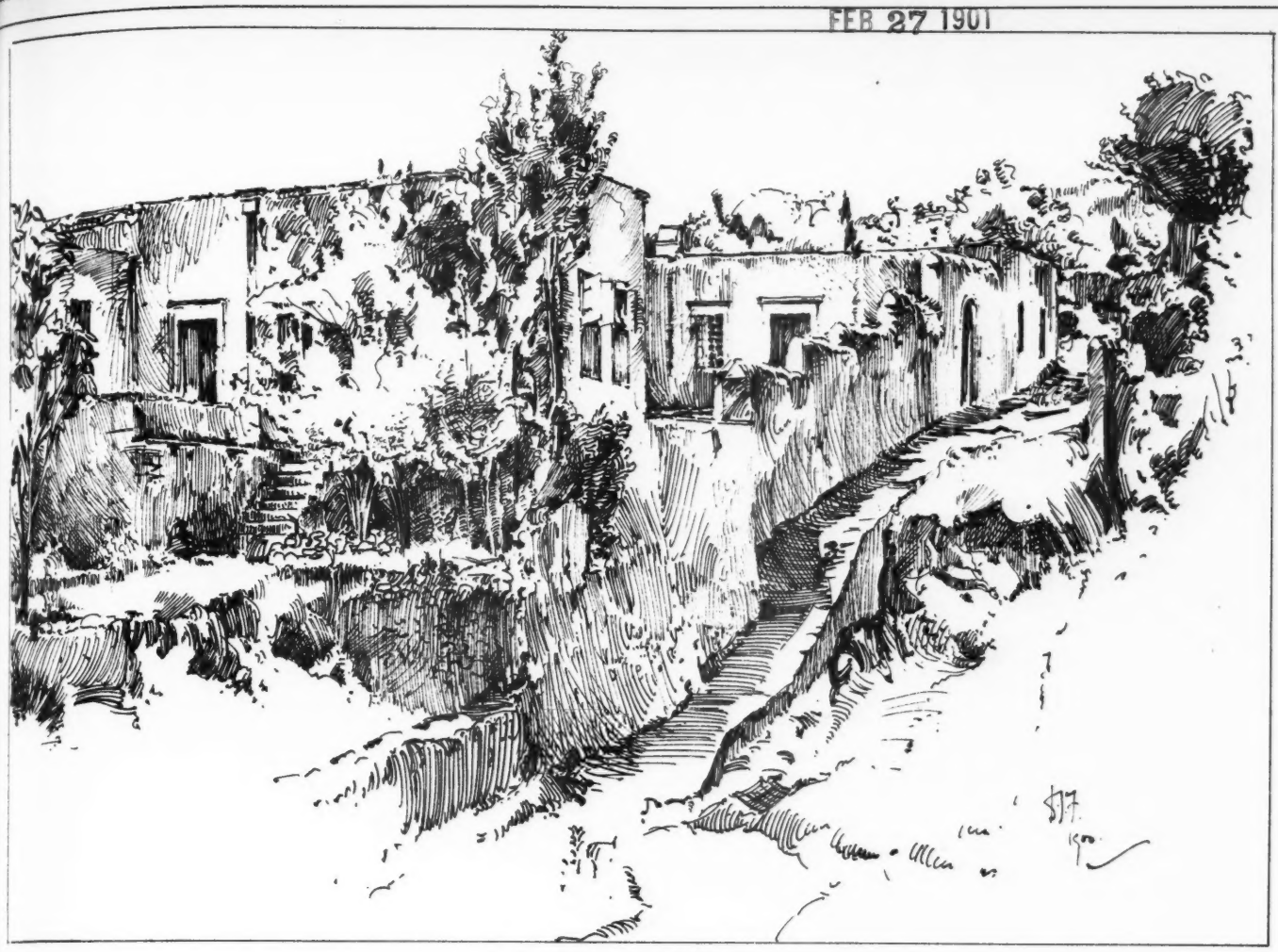

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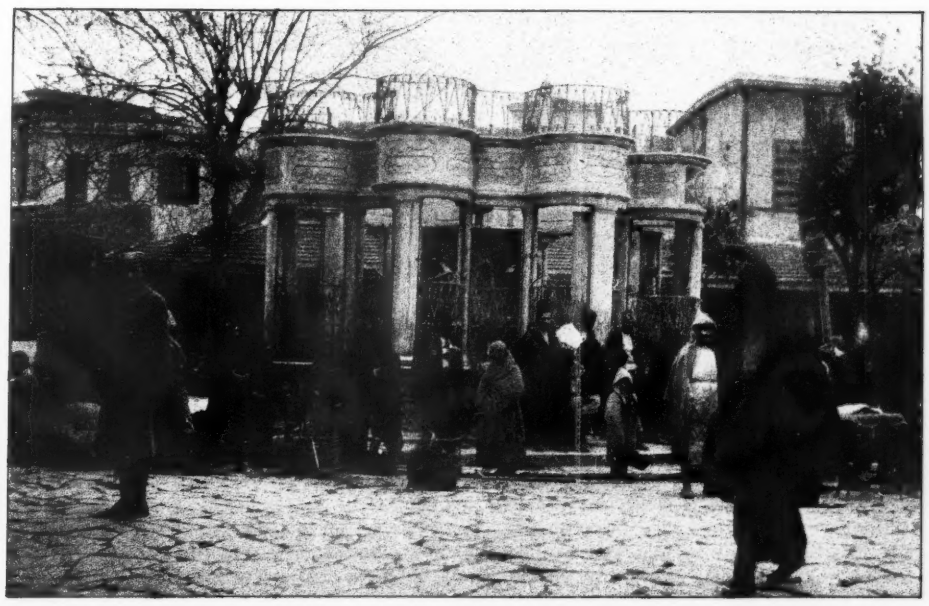

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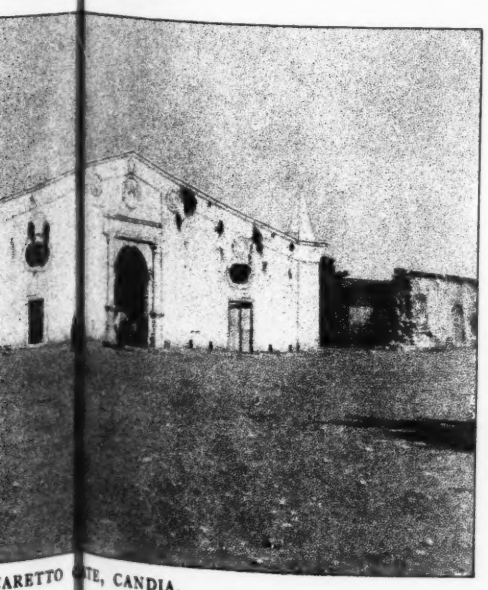

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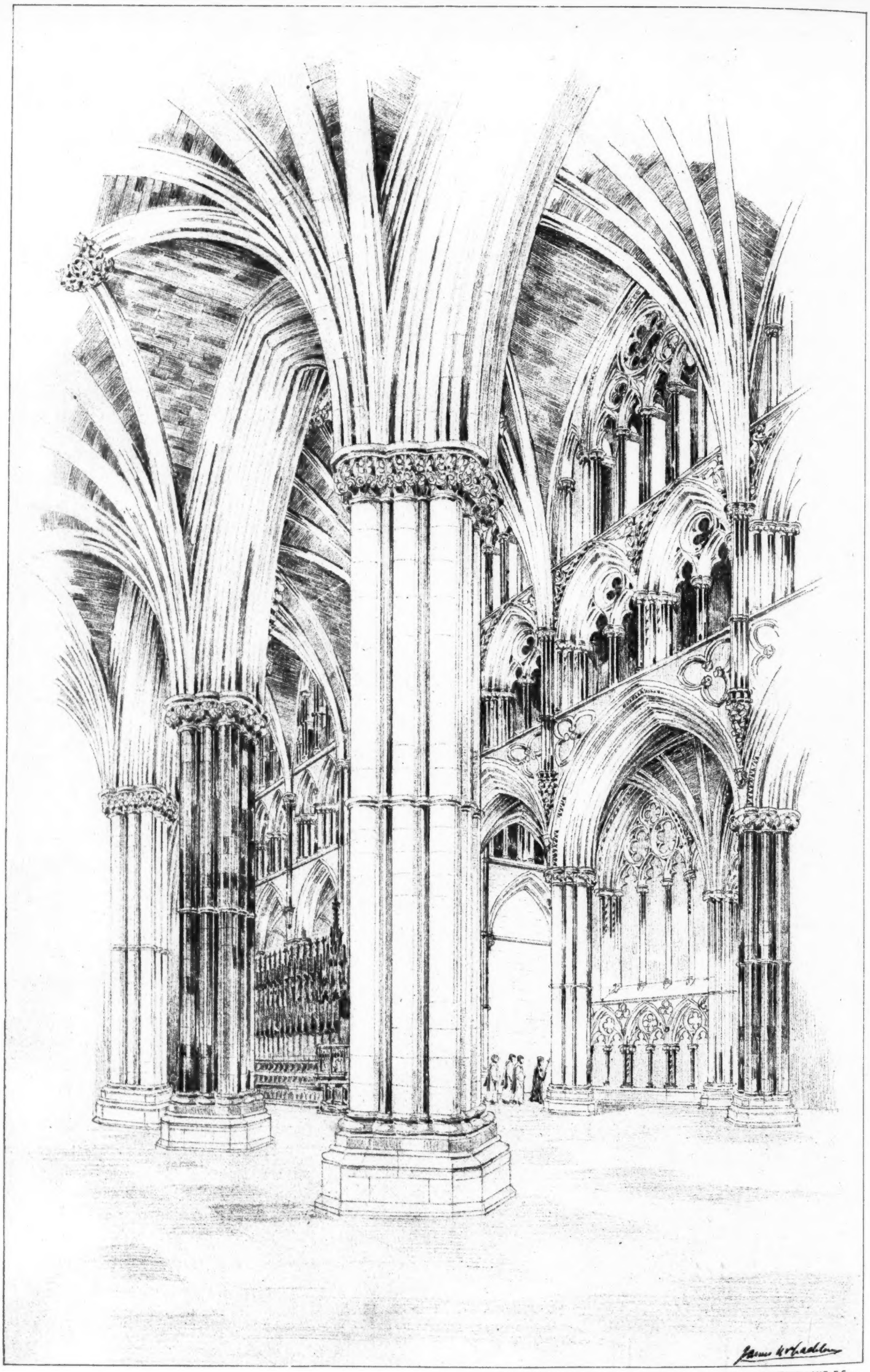

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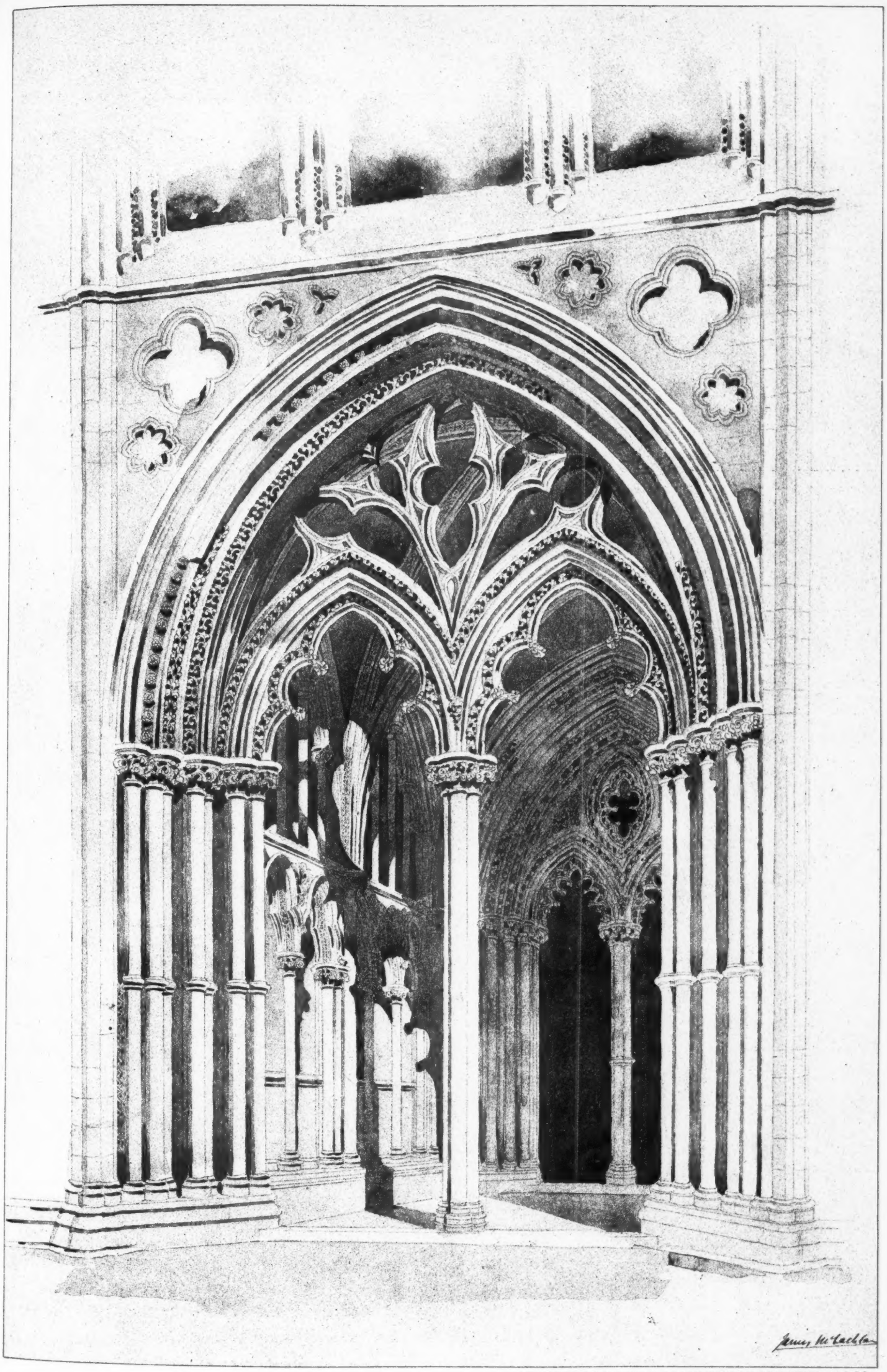

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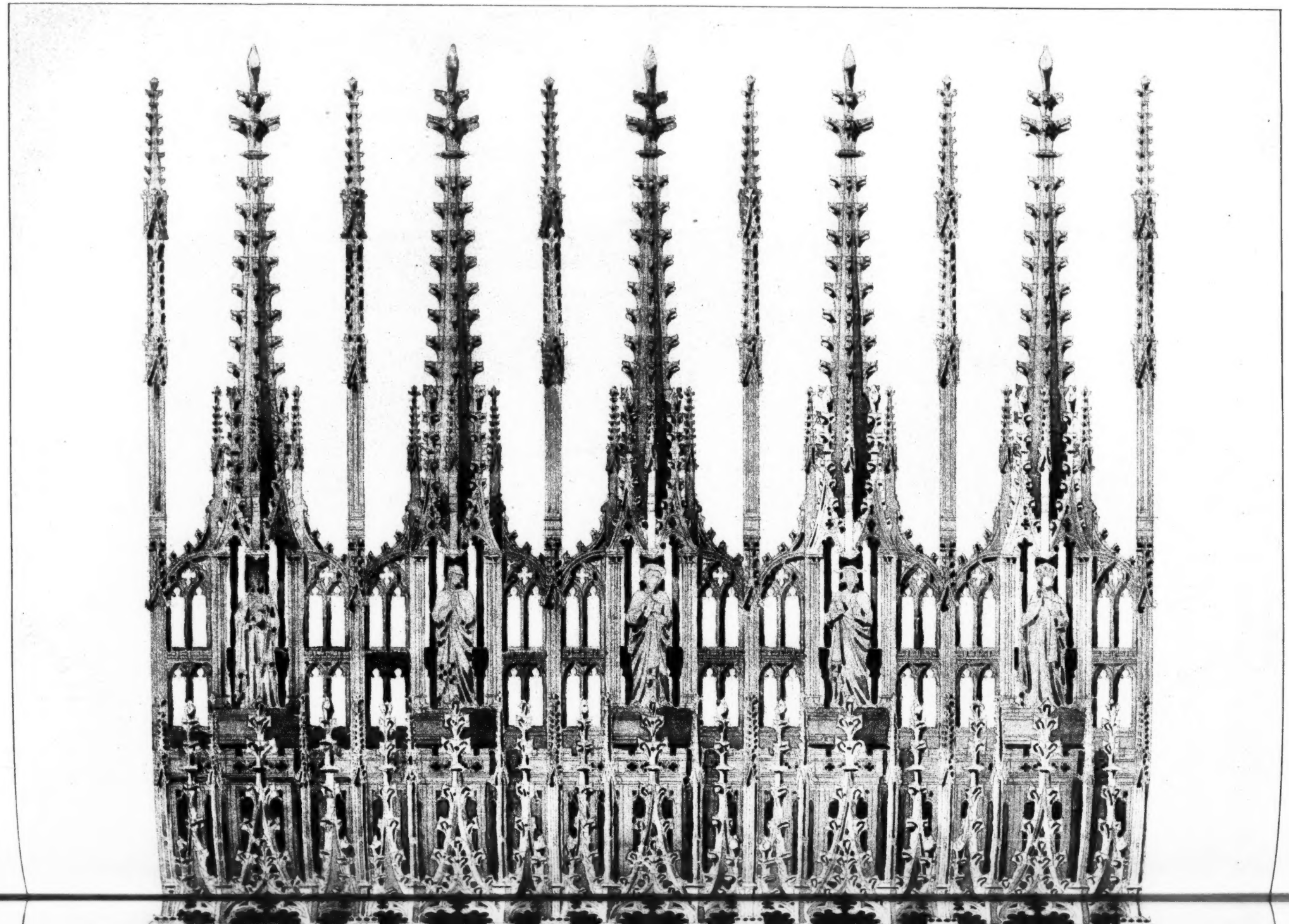

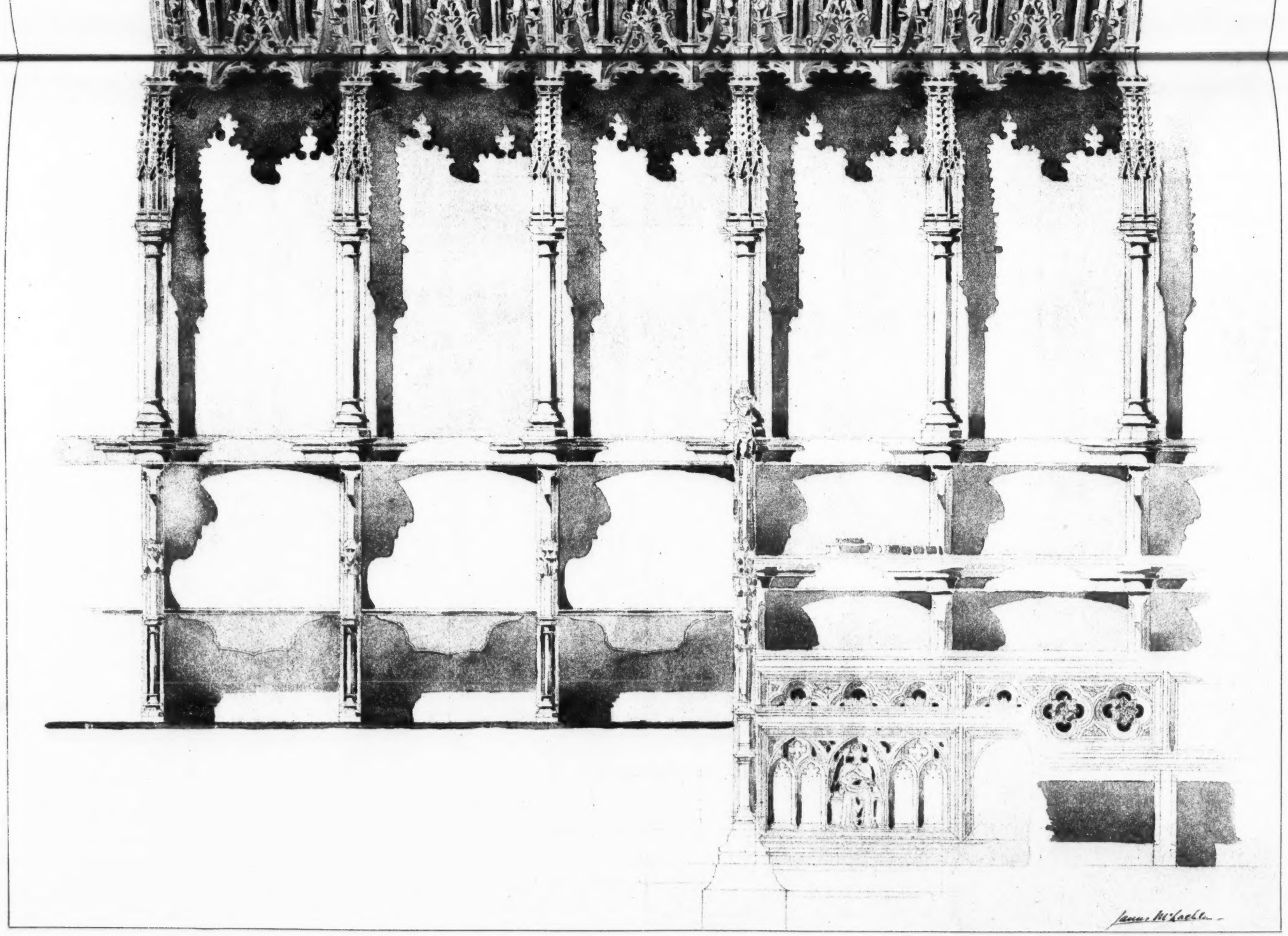

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